DOCUMENT RESUME

ED 337 942 EC 300 684

AUTHOR Tapp, Kenneth L.; And Others
TITLE A Guide to Curriculum Planning for Visually Impaired Students. Bulletin No. 91540.
INSTITUTION Wisconsin State Dept. of Public Instruction, Madison.
PUB DATE Jul 91
NOTE 197p.
AVAILABLE FROM Wisconsin Department of Public Instruction, P.O. Box 7841, Madison, WI 53707-7841.
PUB TYPE Guides - Classroom Use - Teaching Guides (For Teacher) (052)

EDRS PRICE MF01/PC08 Plus Postage.
DESCRIPTORS Art Education; *Blindness; Consumer Education; *Curriculum Guides; Daily Living Skills; Delivery Systems; Elementary Secondary Education; *Handicap Identification; Language Arts; Mathematics; Partial Vision; Physical Education; Preschool Education; Reading; Recreation; Referral; Science Education; Social Studies; *Student Evaluation; Teaching Methods; *Visual Impairments; Visually Handicapped Mobility

ABSTRACT

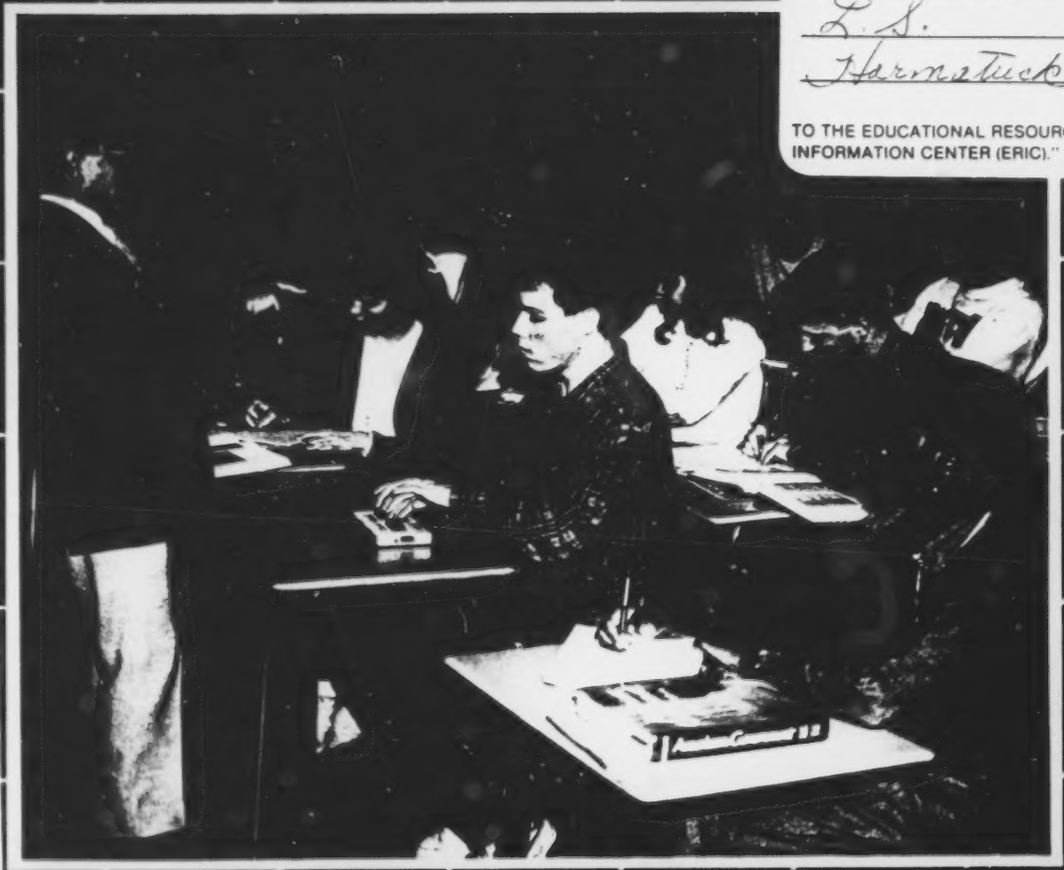
This guide to providing educational services to students with visual impairment is intended for use by educators in either mainstreamed or specialized settings and encourages the use of a broad spectrum of service options in both rural and urban areas of Wisconsin. The guide first presents information on the detection, referral, and assessment process. It then offers specific material about the counseling needs and psychosocial development of the visually impaired student. Individual chapters address the following topics: detecting visual impairments and referral; assessment; psychosocial development; preparing for instruction in various settings; early childhood and preschool education; reading and language arts; science and mathematics; family and consumer education and social studies; physical education and health; creative arts and recreation; preparation for work; special curriculum needs (e.g., orientation and mobility and daily living skills); and the presence of additional disabilities or giftedness. Appendixes provide additional information on the Wisconsin Educational Services Center, a list of resources, a glossary, a bibliography (of approximately 130 items), suggested resources for career education, and a sample eye report form. (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

A GUIDE TO CURRICULUM PLANNING FOR *Visually Impaired Students*

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
L. S. Harnetiaux
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."



Wisconsin Department of Public Instruction
Herbert J. Grover, State Superintendent

EC 300684

BEST COPY AVAILABLE

A Guide to Curriculum Planning for Visually Impaired Students

Wisconsin Department of Public Instruction
Herbert J. Grover, State Superintendent

Kenneth L. Tapp
Teacher-Supervisor
Wisconsin School for the Visually Handicapped

James G. Wilhelm, Ed. D.
Director of Special Education
Palmyra Eagle Area School District

Lori J. Loveless
Educational Specialist
Educational Services for the Visually Impaired

Victor J. Contrucci
Administrator
Division for Handicapped Children
and Pupil Services

William English
Superintendent
Wisconsin School for the Visually Handicapped

This publication is available from:

Publication Sales
Wisconsin Department of Public Instruction
P.O. Box 7841
Madison, WI 53707-7841
(800) 243-8782

July 1991

Bulletin No. 91540

Copyright ©1991 by Wisconsin Department of Public Instruction

The Wisconsin Department of Public Instruction does not discriminate on the basis of race, color, sex, age, religion, handicap, or national origin.

Contents of the Guide

		Page
Foreword		v
Acknowledgments		vii
Introduction		ix
Purpose		xi
1	**Detecting Visual Impairments in Children**	
	Identification	2
	Referral Process	3
2	**Assessment**	
	Introduction	6
	General Considerations	6
	Assessment Instruments	7
3	**Psychosocial Development**	
	Counseling Needs	14
	Development of Self-Concept	15
4	**Preparing to Teach a Blind or Visually Impaired Student**	
	Introduction	22
	Preparing for the Student	23
	Independence	27
	Social Interaction	31
5	**Early Childhood and Preschool Education**	
	Introduction	34
	Sensory Stimulation	34
	Development and Skills	36
	The Family	38
6	**Reading and Language Arts**	
	Reading Readiness	40
	Different Reader Adaptations	42
	Reading Technology for Print	43
	Reading Technology for Braille	45
	Language or Literature Classes	46
	Listening and Writing Skills	47
	Computers	51
7	**Science and Mathematics**	
	Scientific Concepts	56
	Organization	56
	Equipment and Materials	57
	Mathematics Concepts	58

Text Modifications 59
Learning System Modifications 61

8 Family and Consumer Education and Social Studies
Relevance of Family and Consumer Education to the Visually Impaired 66
Purpose of Social Studies 68
Experience 69
Classroom Modifications 69

9 Physical Education and Health
The Importance of Physical Education for the Visually Impaired 76
Preparing for the Blind or Visually Impaired Student 76
Assessment 80
Health Education 80

10 Creative Arts and Recreation
The Creative Arts Experience 84
The Need for Recreation 90

11 Preparation for Work
Introduction 94
General Program Planning 94
Including Visually Impaired Students in Vocational Education Classes 97
Career Education 98

12 Special Curriculum Needs
Orientation and Mobility 108
Daily Living Skills 118
Low Vision 123

13 Additional Exceptional Educational Needs
Cognitive Disability 136
Learning Disability 139
Emotional Disturbance 141
Giftedness 143
Speech and Language 146
Physical and Occupational Therapy 151

14 Appendixes
A. Educational Services Center 158
B. Resources 163
C. Glossary 171
D. Selected Bibliography 174
E. Resources for Career and Work 183
F. Sample Eye Report Form 191

Foreword

The Educational Services Center (ESC) for the Visually Impaired provides services for students in all local school districts throughout the state of Wisconsin. The mission of the ESC is to promote an appropriate educational experience for all visually impaired children of the state, regardless of their educational placement. During the 1989-90 school year the ESC provided services to over 900 visually impaired children in 271 Local Education Agencies (LEAs). People from the Wisconsin School for the Visually Handicapped and the ESC spent several years producing *A Guide to Curriculum Planning for Visually Impaired Students*, a product supporting the ESC's goal of promoting appropriate education for these children.

Visual impairment is a low incidence handicap affecting children who span the whole range of intellectual ability. Use of the term "low incidence handicap" results from the following data. In Wisconsin, during the 1990 school year there were about 900,000 children being served in the state's schools. The over 900 visually impaired students make up one in every thousand children. These 900 are served by approximately 60 teachers who are certified in the area of visual impairment. Approximately 75 percent of these certified teachers are located in the two metropolitan areas of Milwaukee and Madison, and in Janesville, at the Wisconsin School for the Visually Handicapped. This leaves nearly 450 children with visual impairments in about 200 school districts to be served by 16 itinerant teachers and the support services of the ESC. Similar conditions exist in most rural areas of the United States. Consequently, most visually impaired children spend the majority of their school days in programs that have very little access to information about the handicap of visual impairment.

Meeting the unique needs of a low incidence population in a largely rural state is indeed a challenge. Historically, Wisconsin has been a leader in meeting that challenge, through the creative use of service options and the efforts of dedicated professionals. This curriculum guide is part of our continuing effort to enhance our services to visually impaired children by disseminating information and promoting appropriate quality education for all of Wisconsin's visually impaired children.

Although this document cannot take the place of trained teachers, it is an important step toward providing information regarding the needs of visually impaired learners and the services that are available to local school districts.

Herbert J. Grover
State Superintendent

Acknowledgments

Supporting Authors
Jonanne Blau
Debra M. Gilbertson

Additional Authors
Dawn Anderson
Jeanne Appleton
Margaret Frankovich
Mary Gokey
Mary Tellefson
Joanne Zummo

Thanks to
Ruthanne Koeshall (clerical)

Resource Personnel
Susan Andries
Robert Arndt
Mary Burns
Barbara Ditscheit
Laurie Doucette
Cara Droster
Mary Lou Einerson
Thomas Hanson, Ph.D.
Louise Johnson
Rebecca Johnson
Tony King
Larry Nash
Andrew S. Papineau
Debra Rutta
Lynda Ryan
Nancy Smith
Dales Spies
Chris Strickling
Susan Walsh
Margaret Wenzel
Erica Weise
Cheryl Williams

Also gratefully acknowledged are Margaret T. Dwyer, Janet Fishbain, and Ruth Burull, text editors; Victoria Rettenmund, graphic artist; Neldine Nichols, photographer; Kathy Addie and Sandra Zimmerman, management information technicians; Lisa Isgitt and Lisa Brockmeier, proofreaders.

Introduction

Visual impairment is a low incidence handicap. Nationally, fewer than 1 percent of all handicapped children served by the Individuals with Disabilities Education Act (IDEA, formerly called 94-142) and PL 89-313 are visually handicapped. Generally fewer than 1,000 school-aged children are identified as visually handicapped in the entire state of Wisconsin per year.

Wisconsin is predominately a rural state, with most of its 428 school districts serving small communities. Even the larger Wisconsin cities will not have very many visually impaired students compared to those with other handicaps. A child in a small community may be the only visually impaired children in the district.

Vision loss, as a sensory impairment, forces blind and visually impaired students to learn differently than other students. In order to maximize learning, a curriculum for the blind and visually impaired requires specialized teaching techniques and special materials, and often special classes as well.

The authors designed this book for use by educators in either mainstreamed or specialized settings. The guide describes the unique needs of visually impaired students, and offers practical suggestions for meeting many of those needs. Although writing this book as a curriculum guide, the authors recognize that the guide truly extends and adapts much of the work done in earlier DPI guides for various subject areas. Therefore, this guide gives more detailed, "hands-on" information, showing where and how adaptations are made during the classroom teaching experience.

This guide does not promote one service model over another. Rather, it is intended to stimulate creative solutions and the full use of a broad spectrum of service options. It is the desire of the authors to disseminate information and to challenge service providers to make every effort to offer an appropriate quality education program for all of Wisconsin's blind and low vision children.

Purpose

A curriculum guide that deals with educating the blind and visually impaired student is not that different from any other curriculum guide. Adaptation is the focus. Educators know that every student learns differently, developing individual processes and progressions of learning. The visually impaired student especially requires individualized learning techniques. However, for the visually impaired student, some of these processes of learning, like observation, are restricted, so others must be discovered, created, or developed. This discovery of adaptive strategies for teaching the visually impaired is the heart of this book.

As a curriculum guide, this book serves the formal educator of the visually impaired student, the teacher involved in classroom education. This can be either the regular education teacher who has a visually impaired student in the classroom, the certified itinerant teacher who assists and consults with many regular education teachers, or the certified classroom teacher who teaches only the visually impaired. This guide incorporates all of these teaching experiences and emphasizes the experience of other regular education classroom teachers who needs information and structure about education of the visually impaired, because they are generally the least familiar with the field.

This guide introduces information on the detection, referral, and assessment process. It also offers specific material about the counseling needs and psychosocial development of the visually impaired student, which every teacher must factor into his or her strategy of teaching. Once a teacher is familiar with the intellectual and emotional needs of a visually impaired student, he or she moves to more practical, tangible preparation. This guide also offers material on special or multiple needs that often occur with the visually impaired.

Understanding the preparatory needs of the blind and visually impaired student allows teachers, especially regular education teachers, to move into the more specific realm of curricular requirements that all students must master to successfully graduate from Wisconsin's public schools. These curricular sections contain a statement of purpose, a brief description of the possible problems that accompany that particular subject, and several end with sample lessons and case studies that, when combined give an example of the adaptation process that teachers of the blind and visually impaired should anticipate as being necessary for successful teaching.

Interaction among regular education, itinerant, and certified teachers, including the special educators involved with the visually impaired is vital to the education of these students. These teachers can provide one another with assistance and resources if they possess accurate expectations of each other's purpose and role. When all teachers involved in educating the blind and visually impaired understand and utilize one another's skills, knowledge, and talents, the greatest benefit will be reaped—better education for all of Wisconsin students.

Key Terms

Some key terms, although they are familiar, have a particular meaning in the context of this guide. They include the following:

Blind—an individual with vision of 20/200 or less in the better eye, after best correction, or a visual field of 20 degrees or less.

Visually Impaired—an individual with visual acuity of 20/70 to 20/200 after best correction in the better eye.

Regular education teacher—a certified K-12 teacher, without a special education background, who teaches in various areas.

Itinerant teacher—a specialist in a certain disability; someone who serves multiple children in multiple schools.

Certified teacher (of the visually impaired)—a teacher licensed to teach the visually impaired in Wisconsin.

Other specialized or technical definitions can be found in the glossary, Appendix C.

Detecting Visual Impairments in Children

Identification
Referral Process

Identification

School districts and the people who teach in them may be required, at some time, to work with a blind or visually impaired student. A totally blind student is one who has no functional vision and must depend on a mode of learning other than print, such as braille. A legally blind student may have a reduction in functional vision, especially distance vision, but have useful close vision. Finally, various degrees of visual impairment may require some adaption in both the classroom and mode of learning. Some students may be able to see print, especially large, bold letters; others may see only shapes; still others may discern only shadows. As a result, many students with visual impairment can learn from the print mode; others will require mechanical aids to use the print mode; some will rely on braille and other tactile modes; and some will combine various modes of learning.

Children with unidentified vision problems may not complain about poor vision because they do not know what normal vision is. These children assume that everyone sees things the same way they see them.

Some educators in the regular education classroom may overlook students with serious vision problems. That is, visual limitations of a child who has developed good compensatory skills may go undetected. Children with unidentified vision problems may not complain about poor vision because they do not know what normal vision is. These children assume that everyone sees things the same way they see them. The following signs may indicate a vision disorder:

- chronic eye irritations, indicated by watery eyes or by red-rimmed, encrusted, or swollen eyelids, frequent sties.
- nausea, double vision, or visual blurring during or following reading.
- rubbing eyes, frowning, or exhibiting other facial peculiarities when looking at distant objects.
- body rigidity while looking at distant or near objects or while participating in class activities.
- inattentiveness during activities involving the chalkboard, map, or other distant objects.
- excessive blinking or uncontrollable eye movements.
- habitually holding the book very close, very far away, or in other unusual positions when reading.
- unusual head position when reading.
- closing or covering one eye when reading.
- holding objects very close, frequently changing the distance of the book from near to far when reading.
- poor handwriting; difficulty in writing on the line.
- disliking tasks requiring sustained visual concentration.
- nervousness, irritability, restlessness, or unusual fatigue after maintaining visual attention.
- hesitancy in walking or running; faltering for no apparent reason.
- stumbling or tripping over objects; seeming to miss seeing things on one side of the body.
- sensitivity to light.
- difficulty completing assignments on time or under time pressures with a resulting drop in grades. (National Society to Prevent Blindness, 1989)

If any of these signs are present, the teacher should consult the child's parents regarding the scheduling of an eye exam.

Referral Process

The teacher or parents can send the child to an eye-care specialist, such as a pediatric ophthalmologist, for a medical eye exam. If the results of the eye exam indicate a limiting and uncorrectable visual dysfunction, a further assessment should be made. School personnel, parents, or a medical professional may make the educational referrals to Division for Handicapped Children and Pupil Services of the Department of Public Instruction. Procedures for referral and assessment are established by Chapter 115, Wisconsin Statutes. For more information on the referral process, see the Wisconsin Department of Public Instruction's *EEN Guidelines*. The identification of a visual handicap requires a medical examination that should include a functional visual efficiency assessment. Visual fields, ocular motility, binocular vision, accommodation, and functional vision at home and at school are all factors to consider in this assessment.

Once a referral has been made for the child about his or her visual impairment, a certified teacher of the visually impaired should evaluate the child to determine if he or she has any special educational needs related to vision. The examining physician should also complete an "Eye Report for Children with Visual Problems" (see Appendix F). After necessary evaluations are completed, a multidisciplinary team (M-Team) meeting will be held to discuss the results of all the examinations. The school board appoints the M-Team, which must include a certified teacher of the visually impaired. The M-Team then will determine if the child's vision loss is a handicapping condition. If the M-Team identifies a visual handicap, the student's educational needs should be outlined in an individual education plan (IEP). Once a student has been identified as having a visual impairment, the school district should offer a continuum of services to meet the needs detailed in the IEP. (For more information and to learn about the M-Team and IEP process, educators can contact their district's Director of Special Education or designee or see EEN Guidelines.)

Note also that designated students should receive a yearly vision screening. These screenings identify students who may have difficulties with vision. Districts are encouraged to provide annual vision screenings, but currently no state guidelines convey when screenings should be conducted.

References

Signs of Possible Eye Trouble in Children. Schaumburg, IL: National Society to Prevent Blindness. 1989.

Assessment

Introduction
General Considerations
Assessment Instruments

Introduction

The key to a comfortable attitude comes from the examiner's recognizing that he or she is testing a child who happens to be visually impaired.

The psychoeducational assessment of visually impaired and blind students can prove time-consuming and challenging. The lack of technically adequate tests designed for this population adds to the difficulty. Until more adequate tests are developed and normed for the visually impaired, evaluators must gather data from a variety of sources such as interviews, observation, norm-referenced tests, criterion-referenced tests, and informal measures to obtain comprehensive information for effective educational programming.

This section discusses two major topics concerning psychoeducational assessment of the visually impaired. The first topic addresses the general considerations to be aware of when evaluating a visually impaired or blind person. The second topic discusses a variety of assessment instruments to evaluate these children. These assessment guidelines should lead to sound educational recommendations.

General Considerations

For people with little or no experience working with visually impaired and blind children, assessing a child with a visual impairment can often evoke feelings of inadequacy, based on stereotyped images of a blind person as either helpless and dependent or as having "unusual abilities." The key to a comfortable attitude comes from the examiner's recognizing that he or she is testing a child who happens to be visually impaired. Getting to know the child beforehand will help put both the child and the examiner at ease.

The first and most essential task of the examiner is gathering information about the nature of the visual impairment, its onset, and its implications for development and educational achievement. The best resources are school and health records, direct observation, and consultation with the teacher of the visually impaired, the classroom teacher, and the parents. Some questions to ask include the following:

The first and most essential task of the examiner is gathering information about the nature of the visual impairment, its onset, and its implications for development and educational achievement.

- Is the child a print or a braille reader?
- If the child is a print reader, what size print can the child comfortably read, at what distance?
- Can the child interpret pictures and, if so, of what complexity?
- Does the child have positioning needs?
- Does the child have color vision?
- Does the child use a low vision aid or wear glasses?
- How does light affect the child's vision?

Knowing the extent of the child's usable vision is invaluable in selecting appropriate testing instruments and making the necessary adaptations. The child needs a suitable testing environment. The examiner should arrange for adequate lighting and make sure contrast between test materials and background exists. Again, the teacher of the vision impaired can help adapt the environment to the child's particular needs.

Testing visually impaired and blind students is time-consuming, particularly if much reading or writing is required. The examiner needs to set aside enough time for testing and to spread testing across several sessions. In order to maximize performance, the examiner should look for signs of fatigue in the student and discontinue testing if necessary.

Once the examiner knows the capabilities of the student, selects appropriate instruments based on that knowledge, and adapts the testing environment accordingly, he or she can work more effectively with the child. The authors suggest the following procedure for testing a child:

- Make the child comfortable in the room by giving the child an opportunity to explore the room or by giving a verbal description of the room's arrangement.
- Speak in a normal tone of voice (many examiners unconsciously raise their voices).
- Explain what you are doing in order to allay unnecessary anxiety if the child is blind.
- Place objects that need to be handled in shallow trays for easy access.
- Assist a child who drops an object by giving specific verbal directions about where to find it.
- Use encouraging words, clap your hands, or pat children on the back to give children positive reinforcement because they may not see encouraging smiles or nods.

Once the examiner knows the capabilities of the student, selects appropriate instruments based on that knowledge, and adapts the testing environment accordingly, he or she can work more effectively with the child.

Assessment Instruments

Before selecting an evaluation tool, the examiner should identify the purpose for the evaluation. The most common referrals in the school setting are those which identify a suspected handicap through a multidisciplinary-team evaluation. When a visual handicap is suspected, a certified teacher of the visually impaired thoroughly assesses vision functioning. For a comprehensive evaluation, assessing a child's developmental level, cognitive skills, achievement levels, adaptive skills, and social, emotional, and behavioral development goals are also important.

Assessing Developmental Level

For children with usable vision, the evaluator may conduct developmental assessment, using instruments designed for all young children. Most of the standard test kits contain large, brightly colored materials that young, visually impaired children find attractive.

Presently, no adequate norm-referenced tests of cognitive development exist for blind children under four years old. As an alternative, the evaluator can estimate a child's abilities by using age-referenced items from standardized tests that do not require vision or that can be adequately adapted. The results determine whether the child's skill levels reach those of other children his or her age. Two tests that provide age referents are the Bayley Scales of Infant Development and the Battelle Developmental Inventory.

Bayley Scales of Infant Development. The Bayley Scales consists of a Mental Scale, a Motor Scale, and an Infant Behavior Scale. The Motor Scale and the Infant Behavior Scale can be administered easily to both visually impaired and blind infants. The Mental Scale, on the other hand, while adequately assessing the skills of most visually impaired babies, poses problems in assessing the skills of an infant who has a severe vision loss. This happens when several items must be omitted because the visual demands are too great for the infant. However, without the Mental Scale, the test provides only an age-range of skills. (Bayley, 1969)

Battelle Developmental Inventory. The Battelle is an individually administered test for children from birth to 18 years old. It consists of five domains: cognitive, communicative, motor, adaptive, and personal-social. Adaptations of some, but not all, items requiring vision are suggested for testing visually impaired children. If a child scores too many "0's" on the test because of vision demands, a total score cannot be computed. An alternative possibility, mentioned above, is to describe an age-range of performance based on the age levels of the items passed. (Newborg, et al, 1984)

Ordinal Scales of Psychological Development. The Ordinal Scales, has several adaptable subtests for the blind and visually impaired. However, the evaluator needs a solid understanding of Piagetian theory to make the appropriate adaptations. Although difficult to learn, the test is worth the effort and can provide useful information for educational programming. (Uzgiris and Hunt, 1975)

Other Instruments. The evaluator can use other measurements to obtain useful developmental information. The Wisconsin Behavior Rating Scale (Song and Jones, 1980) measures motor, language, social, and daily living skills and includes special items for assessing the blind and the deaf/blind. The Portage Project (Blumay, et al, 1976) and the Brigance Diagnostic Inventory of Early Development may be used to obtain a more comprehensive picture of the child's development. (Brigance, 1978)

Some instruments developed specifically for the visually impaired lack technical adequacy or a theoretical foundation, so they are most often used as checklists. However, they may provide guidelines for education instruction. A partial lists follows:

- Information Assessment of Developmental Skills for Visually Handicapped Students (Swallow, et al, 1978)
  - — Part One: School-Age Section
  - — Part Two: For Younger Visually Handicapped and Multihandicapped Children
- Oregon Project for Visually Impaired and Blind (Brown, et al, 1979)
  - — Preschoolers
  - — Growing Up: A Developmental Curriculum (Croft and Robinson, 1984)
  - — Reynell-Zinkin Scales (1979)

A book that evaluates the psychometric properties of the main assessment tools listed in this section and succeeding sections is *Psychoeducational Assessment of Visually Impaired and Blind Students: Infancy Through*

High School (Bradley-Johnson, 1986). For suggestions of instruments this state uses, contact the Wisconsin School for the Visually Handicapped Educational Services Center (see Appendix A).

Assessing Cognitive Skills

Wechsler Scales. The Wechsler Scales are the most widely used individual intelligence tests for school-age children. The tests consist of a Verbal Scale that assesses language-related abilities and a Performance Scale that assesses a child's problem-solving skills through his or her use of visual materials. When using a Wechsler Scale to assess the abilities of a blind child, the evaluator usually administers the Verbal Scale only. (Wechsler, 1974)

If necessary, the evaluator can make some minor adaptations, such as picture enlargements or substitution of pictured items with objects, when administering the Verbal Scale to blind students. In general, the evaluator should administer the test as originally intended, then administer the test with the necessary adaptations as a "testing of the limits." The evaluator needs to report the results obtained with and without adaptations as well as any changes made. Since this test has not been validated for visually impaired students, the evaluator needs to make others aware that results may not have the same predictive value for visually impaired students as they would have for sighted children on whom the test was normed.

If necessary, the evaluator can make some minor adaptations, such as picture enlargements or substitution of pictured items with objects ◆

The evaluator can administer the Performance Scale in whole or in part to many children who have visual impairments. Knowledge of the child's specific visual impairment and its effect on performance will guide the evaluator's selection of subtests from the Performance Scale.

Stanford-Binet Intelligence Scale: Fourth Edition. For children who can use their vision for school work, the Stanford-Binet can be administered without any adaptations. The test has pictures and objects that are relatively easy to see. Also, few of its tests are timed so they won't penalize the visually impaired student for taking longer than the average student to focus on visual items. If the evaluator cannot administer some of the subtests because of the child's vision demands, he or she can still obtain a partial composite score. Since this test is not normed on visually impaired students, the evaluator should interpret results cautiously. The Vocabulary, Comprehension, Memory for Sentences, Memory for Digits, Verbal Relations, and Number Series subtests may be used to measure the cognitive skills of blind students. (Thorndike, et al, 1986)

Blind Learning Aptitude Test (BLAT). As a useful supplement to the Wechsler Verbal Scale, BLAT can be used to assess nonverbal skills of the blind child. It consists of a series of raised dot patterns. In some of the tasks, the child tries to find the figure that is the same as or different from those in a series, the drawing that completes a figure, and the figure that completes a series or an analogy. (Newland, 1971)

Goodenough-Harris Drawing Test. This test can be used as a screening measure for children who have both visual and language impairments. Although the drawings may be more primitive than drawings of sighted

children, the overall scoring still will be valid since it is more important that details be present rather than artistically executed. (Goodenough and Harris, 1963)

Assessing Achievement Levels

Group. Many standard achievement batteries are available from the American Printing House for the Blind (APH) on Federal Quota. Examples include the Metropolitan Achievement Tests (Durost, et al, 1971) and the Stanford Achievement Tests. (Madden, et al, 1973) These tests are available in large print and braille and are listed in the APH catalog. The local teacher of vision impaired or the school's instructional resource center can assist with ordering.

Individual. APH provides large print and brailled editions of the Wide-Range Achievement Test (Jastak and Jastak, 1984) and the Brigance Scales. The Peabody Individual Achievement Test (Dunn and Markwardt, 1970) and the Keymath Diagnostic Arithmetic Test (Connolly, et al, 1976) are available in large print. Several diagnostic reading tests can also be obtained from APH. Most teachers of visually impaired children can provide names of specific titles and the formats available from APH. (Kaufman and Kaufman, 1985)

The Kaufman Test of Educational Achievement (K-TEA) which has clear visual displays is an adaptable individual achievement test for visually impaired students. Some students need print enlargement or transcriptions into braille.

Assessing Adaptive Skills

Many instruments can assess adaptive skills of visually impaired and blind children. The Vineland Adaptive Behavior Scales, a well-developed scale, assesses communication, daily living skills, motor skills, and socialization. Both its Parent Interview Form and Classroom Edition allow for an evaluation of adaptive functioning across environments. It also has special norms for visually impaired children in a residential setting. The evaluator should use it cautiously, however, as multihandicapped children at certain age levels in the norming group may be overrepresented. (Sparrow, et al, 1984)

The AAMD Adaptive Behavior Scales-School Edition (Lambert, et al, 1974) illustrates the functioning level in five major areas: personal self-sufficiency, community self-sufficiency, personal-social responsibility, social adjustment, and personal adjustment. A profile of domain strengths and weaknesses, also available, helps in formulating Individualized Education Program (IEP) goals and objectives. The Callier-Azusa Scale (Stillman, 1974) measures adaptive skills of deaf and blind children. In addition, developmental scales can be used to assess adaptive functioning.

Assessing Social, Emotional, and Behavioral Development

The checklists, scales, observations, and interviewing methods used with sighted children to assess social, emotional, and behavioral development also apply to blind or visually impaired children. Some visually impaired and blind children may have autistic-like behaviors or mannerisms that may be temporary in nature. Behavior rating scales sensitive to measuring these behaviors may provide information for program planning. Some adaptive scales such as the AAMD Adaptive Behavior Scales and the Vineland also measure maladaptive behavior. (See Appendix C.)

Summary

Assessing the skills of blind and visually impaired children can be a challenging but rewarding experience. After overcoming initial insecurities, most examiners find they have the basic competencies and tools needed to reasonably assess a child's abilities. The foundation for evaluating visually impaired or blind students is knowledge about the handicap and its potential impact on growth and development. With this information, the examiner can better interpret findings and make appropriate recommendations for educational programming. This guide recommends using resources such as the local certified teacher of the visually impaired or vision certified education specialists associated with the Department of Public Instruction (see Appendix A).

The foundation for evaluating visually impaired or blind students is knowledge about the handicap and its potential impact on growth and development

References

Bayley, N. *Bayley Scales of Infant Development*. San Antonio, TX: The Psychological Corporation, 1969.

Bluma, S., M. Shearer, and J. Hilliard. *Portage Guide to Early Education*. Portage, WI: Portage Project, 1976.

Bradley-Johnson, S. *Psychoeducational Assessment of Visually Impaired and Blind Students: Infancy Through High School*. Austin, TX: PRO-ED, 1986.

Brigance, A. *Brigance Diagnostic Comprehensive Inventory of Essential Skills*. North Billerica, MA: Curriculum Associates, 1983.

Brigance, A. *Brigance Diagnostic Inventory of Essential Skills*. North Billerica, MA: Curriculum Associates, 1981.

Brigance, A. *Diagnostic Inventory of Early Development*. North Billerica, MA: Curriculum Associates, 1978.

Brown, D. V. Simmons, and J. Methvin. *The Oregon Project for Visually Impaired and Blind Preschool Children*. Medford, OR: Jackson County Education Service District, 1979.

Connolly, A., W. Nachtman, and E.M. Pritchett. *KeyMath Diagnostic Arithmetic Test*. Circle Pines, MN: American Guidance Service, 1976.

Croft, N.B. and L.W. Robinson. *Growing Up: A Developmental Curriculum*. Austin, TX: Parent Consultants, 1984

Dunn, L.M. and F.C. Markwardt, Jr. *Peabody Individual Achievement Test*. Circle Pines, MN: American Guidance Service, 1970.

Durost, W.N, et al. *Metropolitan Achievement Test*. New York: Harcourt Brace Jovanovich, 1971.

Goodenough, F.L. and B.B. Harris. *Goodenough-Harris Drawing Test*. San Antonio, TX: The Psychological Corporation, 1963.

Jastak, J. and S. Jastak. *Wide Range Achievement Test*. Wilmington, DE: Jastak Associates, 1984.

Kaufman, A.S. and N.L. Kaufman. *Kaufman Test of Educational Achievement*. Circle Pines, MN: American Guidance Service, 1985.

Lambert, N., M. Windmiller, L. Cole, and R. Figueroa. *AAMD Adaptive Behavior Scale, Public School Version*. Washington, DC: American Association on Mental Deficiency, 1974.

Madden, R., et al. *Stanford Achievement Test*. New York: Harcourt Brace Jovanovich, 1973.

Newborg, J., et al. *Battelle Developmental Inventory*. Allen, TX: DLM/ Teaching Resources, 1984.

Newland, T.E. *The Blind Learning Aptitude Test*. Urbana, IL: University of Illinois Press, 1971.

Reynell J. and P. Zinkin. *Reynell-Zinkin Scales*. London: NFER Nelson, 1979.

Song, A.Y. and S.E. Jones. *Wisconsin Behavior Rating Scale*. Madison, WI: Central Wisconsin Center for the Developmentally Disabled, 1980.

Sparrow, S., D. Balla, and D.V. Cicchetti. *Vineland Adaptive Behavior Scales*. Circle Pines, MN: American Guidance Service, 1984.

Stillman, R.D. *Assessment of Deaf-Blind Children: The Callier Azusa Scale*. Reston, VA: Council for Exceptional Children, 1974.

Swallow, R.M., S. Mangold, and P. Mangold. *Informal Assessment of Developmental Skills for Visually Handicapped Students*. New York: American Foundation for the Blind, 1978.

Thorndike, R.L., E.P. Hagen, and J.M. Sattler. *Stanford-Binet Intelligence Scale*, 4th ed., 1986.

Uzgiris, I.C. and J. Hunt, McV. *Assessment in Infancy: Ordinal Scales of Psychological Development*. Urbana, IL: University of Illinois Press, 1975.

Wechsler, D. *Wechsler Intelligence Scale for Children Revised*. San Antonio, TX: The Psychological Corporation, 1974.

Wechsler, D. *Wechsler Preschool and Primary Scale of Intelligence*. San Antonio, TX: The Psychological Corporation, 1967.

Psychosocial Development

Counseling Needs
Development of Self-Concept

BEST COPY AVAILABLE

Counseling Needs

Blind or visually impaired students face many challenges. They must learn how to move in strange environments, learn personal management skills, and learn how to adapt socially to a society that may not understand a visually impaired person's needs. Often they also must adjust to their own feelings about losing their sight and to the practical considerations that loss implies. Because few people have visual disabilities, adequate peer models from whom to learn are scarce. Adults who lack experience with visually impaired children unrealistically may expect certain accomplishments from the child. These challenges put the visually impaired student at risk for adjustment difficulties and in possible need for counseling at different developmental periods of life.

The counselor should be aware of a visually impaired child's unique needs as well as those common to all children.

However, people with visual impairments lead rewarding lives more often than not. Contentment, pleasure, and happiness do not depend upon sight or the lack of it. Effective counseling support, if needed, can help visually impaired people meet and master personal challenges so that their potential can be developed and a high quality of life achieved.

To understand the variety of possible counseling needs of a visually handicapped child, one must consider the impact of the vision loss on both the child and the family.

Impact of a Diagnosis of Visual Impairment

When parents are first informed that their child has a serious physical defect, they may experience shock, grief, anger, despair, and anxiety about the future. Shock, a numbing and natural experience, helps people survive traumatic situations. Grief follows, mourning the loss of what could have been. The other emotions follow in mixed order and may recur every time the physical condition of the child changes. (Schultz, 1980)

Counseling services for these families can help replace feelings of despair and anxiety with hope. The counselor should be aware of a visually impaired child's unique needs as well as those common to all children. Counselors can help the family discover how they can best care for this child, provide information concerning ways to meet the child's needs for supplementary stimulation, indicate where to find people and agencies who are prepared to help them and their child, and consult with others in the community who are also working with the family and child.

The advent of a child who has a handicap strains the coping abilities of the caregiver and the family.

Not all parents can initially provide warm, accepting messages to a child born visually impaired. Some may experience their own personal adjustment problems after the birth or experience strained marital relationships. The advent of a child who has a handicap strains the coping abilities of the caregiver and the family. A person with an inadequate self-concept may reject the "not perfect" infant or may compensate for giving birth to a less than physically perfect child by smothering or overprotecting the infant, while disregarding the needs of other family members. Siblings, mimicking parental attitudes, may reject the child who is perceived as the possible cause of family difficulties. The older children are when vision loss occurs,

the more they will be aware of the loss and its implications for life. Mourning the loss of something as precious as eyesight is normal and is often experienced by the older child. The child may need counseling support to move from depression and despair to hope and the motivation to acquire skills necessary for a satisfying life. Introducing the child to other children who have adapted to vision loss can speed the process towards acceptance and hope for the future.

Visually impaired children need to see themselves as responsible, contributing members of the family.

Development of Self-Concept

In addition to understanding the impact of vision loss on the child and the family and its implications for a healthy personal adjustment, it is also important to understand how vision affects the child's mastery of basic psychosocial, developmental tasks. Without vision, and sometimes even with some vision, the visually impaired child must overcome obstacles not normally encountered by the sighted growing child. How well the visually impaired child masters these tasks and how the important people in his or her life support the child through these stages determines the development of a healthy self-concept and subsequent successful life adjustment.

Early Childhood

Parents and family play an important role in developing a child's self-esteem. Just like the sighted child, the visually impaired child needs to move from a protected to a less secure environment. Additional effort may be required for this to happen with a visually impaired child. It is important for parents to communicate to their visually impaired child what their expectations of his or her success will be. This is often difficult because the parents themselves are unsure of what the future holds for their child. Visually impaired children need to see themselves as responsible, contributing members of the family. This includes setting consistent responsibilities and behavioral rules for both sighted and nonsighted siblings. This helps the child learn at an early age that societal rules and expectations are not altered because of poor vision.

Satisfying peer relationships also contribute to high self-esteem. Peers provide feedback about what is considered acceptable social behavior. Vision generally helps the student learn non-verbal cues, such as frowns or nods, which indicate when behavior needs to be altered. Watching other children play provides clues about acceptable behavior. The acceptance of a visually impaired child into a peer group ". . . may be hindered because the child cannot see to imitate his peers or to utilize nonverbal communication skills in order to know when he is acceptable; if he is not acceptable, he cannot imitate the necessary behaviors to secure acceptance. His lack of vision may prevent him from learning what is accepted by his peer group." (Scholl, 1986)

The acceptance of a visually impaired child into a peer group ". . . may be hindered because the child cannot see to imitate his peers or to utilize nonverbal communication skills in order to know when he is acceptable; if he is not acceptable . . . —Scholl

School Age

Teachers can create a healthy self-esteem in the visually impaired student by focusing on that student's strengths while acknowledging and adapting to the limitations from vision loss.

Enrollment in school necessitates branching out from the family into a new environment. Visually impaired students may need help and encouragement to develop a wider circle of friends. Formal instruction and practice in social skills may be necessary. Parents and teachers may need to encourage the visually impaired students to take risks, and sometimes experience failure, in order to develop socially.

It is the teacher's responsibility to create an atmosphere that assures the visually impaired student is accepted as a contributing member of the class. Classmates will be sensitive to how a teacher responds to the visually impaired student and this will in turn influence how the students respond to the visually impaired student. Teachers can create a healthy self-esteem in the visually impaired student by focusing on that student's strengths while acknowledging and adapting to the limitations from vision loss.

Some visually impaired students are afraid to admit that they cannot see and may hide their difficulty by misbehaving or by pretending that a task is too boring or too difficult. The child should not be criticized for not seeing well and must learn that it is acceptable to admit that something is not easily seen. If the child indicates difficulty seeing an item, the teacher can show acceptance by providing a modification or alternative task. However, it is important for the child's self-esteem that the teacher maintain high expectations while adapting to the student's special needs.

Students with low vision seem to have more difficulty with teacher acceptance than do the totally blind. This may be due in part to the lack of knowledge on the teacher's part about limited vision, and the student's own reluctance to admit limitations. Certain eye conditions may involve fluctuations in visual function. Fatigue, illness, stress, motivation, field losses, and lighting conditions may influence what the student is able to see. As a result, many students appear to have good times and bad times with regard to their vision. This can be confusing to the visually impaired student, and classmates and teachers as well. The student is the best judge of what can be accomplished, and should be expected and encouraged to articulate those needs.

Adolescence

Adolescence can be a particularly difficult time for the visually impaired student. Having a visual impairment automatically makes a teen feel different from the peer group, which traditionally values conformity and a sense of belonging. With impaired vision a teen may not be able to see the latest fads in clothing, hairstyles, mannerisms, or other important aspects of adolescent life. The student may require some assistance from friends, relatives, or teachers to identify current trends in teen culture. Specialized instruction in techniques for grooming, dressing, and other daily experiences may be necessary for some students. Helping the blind teen understand his or her maturing body is also important. (Schultz,1980)

Adolescents also value independence highly. Because some aspects of dependency are inherent in lack of vision, achieving more autonomy from

the family may be delayed for many visually impaired adolescents until they master the advanced skills necessary for independent functioning. Wanting more autonomy while realizing the need for some dependency because of a visual impairment can cause frustration, anger, and despondency.(Schultz, 1980) "Many of the rites of passage into adulthood, such as driving a car, travelling alone to distant places, earning money are unavailable to many visually handicapped adolescents, sometimes because of overprotective parents." (Scholl, 1986)

Counseling support during adolescence can help visually impaired teens perceive themselves as whole and complete, despite their physical impairment. Families may need help in understanding the conflicting feelings of the visually impaired teen. They may also need help understanding the importance of allowing the teen to have wider experiences and greater autonomy, even if it means the adolescent may encounter failure or insensitive societal reactions. Parents sometimes have to deal with ambivalent feelings of wanting to protect their son or daughter, yet simultaneously wanting the adolescent to be more independent. If school counselors understand the dominant role played by family acceptance of vision impairment, they can make an extra effort to involve parents in counseling sessions.

Career Guidance

Finally, the visually impaired adolescent may need assistance in choosing an appropriately realistic vocation or career. Teachers, when discussing career choices with their visually impaired students, should avoid channelling students' energies and interests into careers that the visual impairment makes impossible, like an airplane pilot or a truck driver. The guidance counselor should be flexible in considering alternative choices with the visually impaired student. The Wisconsin School for the Visually Handicapped and Educational Services Center in Janesville can assist in assessing career strengths and weaknesses. (See "Preparation for Work.")

Genetic Counseling

Because many eye conditions are the result of genetic inheritance, a visually impaired young adult who is considering having children needs to seek genetic counseling. Likewise, parents of a visually impaired child should consider genetic counseling if they plan to have more children. Genetic counseling helps identify familial inheritance patterns, and also provides information about potential medical complications associated with inherited eye conditions. Such information helps individuals and families understand the eye conditions in question and provides them with information needed for responsible decision making.

In Wisconsin, individuals may obtain genetic counseling by contacting the Genetic Sensory Deficits Clinic in Madison. The Clinic is part of the University of Wisconsin's Hospitals and Clinics System. It maintains satellite offices in several Wisconsin communities. Interested persons can contact the clinic in Madison for information about the nearest location.

"Many of the rites of passage into adulthood, such as driving a car, travelling alone to distant places, earning money are unavailable to many visually handicapped adolescents, sometimes because of overprotective parents."
—Scholl

This discussion of psychosocial development and the particular challenges that the visually impaired student must meet only gives the broadest outline of potential intervention needs. Remember that the visually impaired student may need help, just as any student would, in coping with the stresses of life.

"The person with little or no sight . . . is accutely aware of his [or her] dependence on others."
—Schultz

Social Challenges

Reactions to vision loss and subsequent adjustment varies with each individual. It is important for a school counselor to know that some social adjustment problems are directly related to a student's vision loss. Some forms of adjustment are normal when sight is initially lost, but if these adjustments persist too long, they may be maladaptive. Schultz (1980) and Tuttle (1984) point out that withdrawal, fantasy, dependency, and identification problems commonly follow the loss of vision. While their works focus primarily on adults, sighted children respond similarly when they lose their vision.

Withdrawal and Fantasy

". . . some degree of withdrawal is an unavoidable consequence of a major loss of sight." (Schultz, 1980) A child may withdraw physically, preferring to stay in secure surroundings and avoid peers or new situations. The child may withdraw emotionally, keeping friends at a distance and limiting the content of communication to comfortable, superficial topics. In both cases the child is attempting to cope with the painful feelings associated with vision loss. If the child does not break through this emotional barrier, she or he may become isolated from the mainstream of society. (Schultz, 1980)

Avoidance by the visually impaired child's peer group may exacerbate the feelings of isolation and may make physical and emotional withdrawal permanent. Often sighted people are unsure and uncomfortable when trying to relate to someone with a vision loss. Their own sense of confusion, inadequacy, and fears may keep them from interacting with a blind person.

As a result, people feeling isolated often take refuge in an active fantasy life. While everyone fantasizes at times, it becomes detrimental if a person replaces active living for a fantasy world. In order to break out of the isolation, the visually impaired person must learn the skills necessary to become more active.

Dependency

Everyone experiences dependency. "The person with little or no sight, however, is accutely aware of his [or her] dependence on others." (Schulz, 1980) A child in the early stages of sudden or major sight loss is usually extremely dependent. It takes time to learn the skills needed to travel and take care of personal needs. A maladaptive adjustment can be either over-dependency on others or excessive independence which jeopardizes the child's own or others' safety. A good adjustment to the dependency stage is

the child's acknowledging limitations but doing as much as possible on his or her own.

Identification

Identification with peers forms a normal part of development. By identifying with a group, a person receives support and can accomplish things not ordinarily possible alone. Identification with a group may also have negative aspects. The group may not have the same goals as the individual, may not allow autonomy, or may not approve of a member associating with those considered below the standards of the group. (Schulz, 1980)

"Some individuals who lose their sight attempt to maintain their identification with the sighted. They refuse to associate with other blind people because they might be implicated as members of the 'blind.'" (Schulz, 1980) They may attempt to convey the impression that they can see more than they really can. They become hypercritical of blind people while placing more emphasis on sight than on the individual's intrinsic self-worth, with or without sight.

Some blind or low vision persons identify only with those who are visually impaired. They prefer to meet only with other blind people for social activities and avoid social contacts with sighted people. They do not feel at ease with sighted people and may feel unable to bridge the gap between blind and sighted people. (Schulz, 1980)

Unfortunately, some social groups do exclude people who are visually impaired or react in ways that make the blind person feel uncomfortable. Both the visually impaired person and the sighted person need to work on making each other feel at ease. A person who has developed a secure, valued sense of self will probably convey that impression to others and put them at ease. Good-natured humor is another way for a visually impaired person to ease into a group. Successful social interactions will increase confidence and eliminate the need for a visually impaired person to associate with only one group.

If the counselor hesitates about working with a visually impaired student, she or he should first acknowledge his or her own feelings and attitudes toward blindness . . .

Counselor Considerations

To work effectively with a visually impaired student, a counselor needs to understand how a visual handicap affects that student. The child will quickly realize if the counselor feels uncomfortable or cannot empathize with the child's experiences. If the counselor hesitates about working with a visually impaired student, she or he should first acknowledge his or her own feelings and attitudes toward blindness and resolve any problems before these are communicated inadvertently to the student.

Many of the problems that a visually impaired student might have can be linked to the psychosocial impact of family reactions or societal responses to vision loss. Low self-esteem or social problems at school can also be directly related to vision loss. All of these issues affect a student's school performance. The school counselor who understands these unique needs can be more effective in helping both the student and that student's teachers.

References

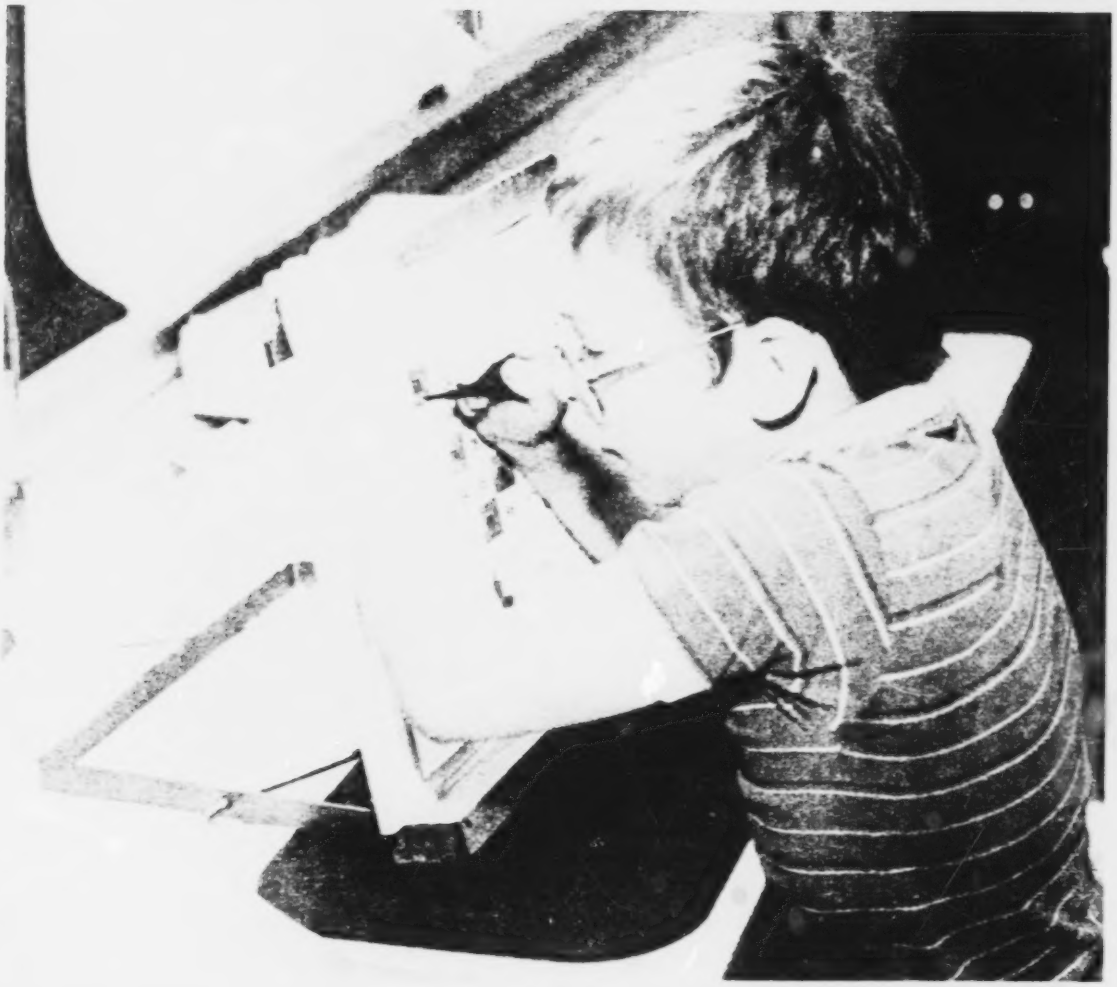
Scholl, G.T. "Visual Impairments and Other Exceptionalities" in *Foundations of Education for Blind and Visually Handicapped Children and Youth*. Ed. G.T. Scholl. New York: American Foundation for the Blind, 1986. 137-144.

Schultz, P.J. *How Does It Feel to be Blind? The Psychodynamics of Visual Impairment*. Los Angeles: Muse-Ed Company, 1980.

Tuttle, D.W. *Self-Esteem and Adjusting with Blindness: The Process of Responding to Life's Demands*. Springfield, IL: Charles C. Thomas, 1984.

Preparing to Teach a Blind or Visually Impaired Student

Introduction
Preparing for the Student
Independence
Social Interaction



BEST COPY AVAILABLE

Introduction

Visually impaired students have a wide range of visual functions.

This section outlines some considerations to take into account when educators plan to accommodate visually impaired students. Visually impaired students have a wide range of visual functions. Visual acuities of these children can range from 20/70 in the better eye after best correction to no light perception at all. Some students experience restrictions or visual losses within specific areas of their visual fields.

A common misconception is that all low vision students should wear glasses. This is not always the case. For many students, the refractive correction provided by their glasses will not improve their vision to the level of normal visual functioning.

The teacher preparing to teach a blind or visually impaired student should know the specifics of that child's vision condition. The student's medical and educational records, as well as one or more of the following people, may provide some information: parents, doctors, nurses, teachers of the visually impaired, and sometimes the students themselves. Teachers may need to consult these people for further explanations and clarification of written reports. Nonteaching staff members within a school should also know how to meet the student's special needs within their area. An inservice for school personnel, presented by professionals working with visually impaired children, often starts the planning process for the arrival of a blind or visually impaired student in a school program. The teacher of visually impaired children or the district's director of special education may arrange such an inservice.

Scheduling

Several factors need consideration when designing instruction for a blind or visually impaired student. Optimally, the classroom teacher should be informed well in advance of the arrival of a blind or visually impaired student. As soon as possible, a conference needs to be scheduled among the classroom teachers, the student, parents, and the district's director of special education or designee. Whenever possible, the meeting should include a teacher who has specialized in education of blind and visually impaired students. The student's class schedule should then be created based on the student's IEP.

For many students, the refractive correction provided by their glasses will not improve their vision to the level of normal visual functioning.

Typically, the visually impaired student may require more time than the normally sighted student to produce an equivalent volume of classwork. In arranging a schedule for blind and visually impaired middle and high school students, the educator should keep a balance of heavy and light courses in each semester. Overloading the student with reading or writing assignments could result in lower grades and less chance to participate in cocurricular activities. Also the IEP may require scheduling classes in special skills unique to visual impairment. Examples of these classes include orientation and mobility, communications, visual efficiency training, and techniques of daily living. Students who have an itinerant vision teacher may need to set aside time in their schedule to work with that individual on a one-to-one

basis. These many education requirements can affect the date of high school graduation or education program completion. Handicapped students may remain in high school until they are 21 years old to complete the school's requirements and all IEP objectives.

Books and Materials

After determining the schedule, the teacher will need to review books and materials the student will use and determine the appropriate media (braille, large print, standard print, or tape). The classroom teacher can best accomplish this with the help of a teacher of the visually impaired. In Wisconsin, the Educational Services Center, a statewide service center, provides most textbook titles. Obtaining braille books and materials usually takes longer than securing other books. As a result, the teacher needs to plan and schedule in advance. If the teacher anticipates difficulty, or has been told it will take several months to obtain a certain title, she or he may wish to schedule that class for later in the school year.

When selecting the best reading media for a particular student, the teacher should remember that the student can often use a variety of media successfully.

When selecting the best reading media for a particular student, the teacher should remember that the student can often use a variety of media successfully. A combination of print or braille and taped materials can be useful. For many blind and visually impaired students, especially those in middle and high school, the amount of required reading can seem overwhelming. Because of their impairment, these students often cannot read as rapidly as their sighted peers and they may fatigue more easily. Taped materials for specifically designed machines which accelerate or compress speech will help overcome some of these problems.

The National Library Service for the Blind and Physically Handicapped, a division of the Library of Congress, maintains a regional library in Milwaukee which serves the entire state of Wisconsin. Blind and visually impaired students who have registered with the library may borrow talking books in cassette or disk format through the mail. Recordings for the Blind in Princeton, New Jersey also provides tape-recorded textbooks to registered borrowers.

Behaviorally, classroom expectations should differ little for a blind or visually impaired child.

Preparing for the Student

How staff members react toward the blind or visually impaired student affects how the student's peers respond to him or her. The staff may wish to spend some time preparing the class for the student's arrival. Numerous films, videos, books, and activities exist which can help the sighted students and staff better understand what it means to have a visual handicap.

Behaviorally, classroom expectations should differ little for a blind or visually impaired child. The teacher should make sure the student and parents understand these expectations. Teachers should expect that the blind or visually impaired student will follow the same rules of conduct and discipline as other students.

As mentioned, the work produced by a blind or visually impaired student may be quantitatively different compared to the work of a sighted peer. But, in terms of quality, expectations should not differ; and work should be graded accordingly.

When a visually impaired student arrives at the school, the teacher should introduce him or her to the class the same way any student is introduced. Questions will arise about the student and the visual impairment. The teacher should encourage the student to answer these questions. Soon, the other students will discover that the blind or visually impaired student is more similar to them than different. Sighted students should also identify themselves by name to the blind or visually impaired student. They should also speak directly to the student rather than through a third person. Until the student is familiar with an individual and has had enough contact with that person to identify the voice, it is courteous for that person to identify himself or herself when beginning a conversation with the blind student. Common sense and sensitivity are generally the best guides to interacting with a blind or visually impaired person.

Common sense and sensitivity are generally the best guides to interacting with a blind or visually impaired person.

Classroom Orientation

The visually impaired student needs to be oriented to the classroom layout. Familiarizing the student with the room helps him or her become organized and independent within the classroom. An orientation and mobility instructor or a teacher of the visually impaired can help with this. If these specialists are unavailable, the classroom teacher can consider the following:

- familiarize the student with the classroom when other students are not around.
- begin by verbally describing the layout of the room and the position of objects within the room.
- show the student key areas or objects physically.
- make references to the logical relationships or placements of objects to one another. For example, point out a wastepaper basket kept under the sink.
- use the terms "front" and "back" to help the student organize positional relationships.
- show the student how to locate his or her desk from the door. Counting rows of desks or using other objects as landmarks are useful ways to locate a seat.
- point out obstacles at every level, foot to head.
- let the student master one route before learning another. Until the student can move independently to all the necessary places within the room, verbal and physical cues are appropriate.
- familiarize the student with the restroom facilities. Point out the toilets, door latches, sinks, soap and towel dispensers, trash cans, and toilet paper to the child.
- show the student where the necessary supplies and equipment are stored so that he or she can locate his or her own materials.
- refer to left and right in relation to the student's body rather than your own when giving directions.

For some blind and visually impaired students, a sighted guide can help in many situations. An orientation and mobility specialist or teacher of visually impaired children should teach the specific methods for both acting as, and using a sighted guide. For example, the cafeteria line presents problems for some blind or visually impaired children, so they may need a sighted guide. Some students may also use a white cane when traveling. Techniques for using canes and other travel skills and methods may be taught to the child by teachers or specialists trained in orientation and mobility.

Arranging the Classroom

Due to the amount of adaptive equipment and the size of large print and braille textbooks, some blind and visually impaired students require more space for work and storage than do their sighted peers. As an option, the student could have two work areas: his or her regular desk and an additional "study center" to store and use adaptive equipment. The locale of electrical outlets and their accessibility to the student often dictate the placement of this study center. If the student has a locker, he or she may find it easier to use a key lock rather than a combination. Some visually impaired students may need a desk with an adjustable top or a reading stand to bring the work closer, reduce glare, or ease back strain. Blind students may appreciate an easy-to-locate desk near the door at the beginning or end of a row. The teacher also needs to consider the lighting near the low vision student's desk and study center.

The student's eye condition and visual acuity may necessitate that the student sit in a certain area of the room. The teacher can encourage low vision students to move as needed to better see the chalkboard, demonstrations, filmstrips, and so forth. In some cases, he or she may need to provide the student with an in-seat copy of the material being viewed.

A conference with a teacher of visually impaired or a review of medical records will help determine lighting needs and optimal seating arrangements. The teacher should also tell the blind or visually impaired student about classroom rules, such as hand raising. The student may not be able to see this nonverbal communication which may be vital to classroom experience. A "freeze them in their tracks" stare or winning smile may be lost on this student. If both teacher and child are comfortable with it, physical contact, such as a pat on the back, can be substituted easily.

Organizational skills can and should be taught to blind and visually impaired students. The teacher should encourage these students to arrange books and materials in a logical, easily located manner and to return materials to their place when they've finished using them. Something as simple as a pencil box glued inside the desk or an expanding file folder complete with large print or braille labels for each class can help a visually impaired child remain organized.

Safety

Things other people take for granted can become major obstacles for blind or visually impaired students.

The teacher should familiarize the student with the sound of the fire and tornado alarms as well as evacuation procedures in the school. Assigning a sighted guide to the student assures the student and staff that the blind or visually impaired child can move quickly and safely to a secure area. Things other people take for granted can become major obstacles for blind or visually impaired students. Doors left ajar, chairs not pushed in, and students' belongings left in hallways or aisles can cause the student problems when he or she is walking. The teacher can assign a sighted individual to the student if needed when the student is walking in dangerous or unfamiliar areas or when the class participates in a field trip. Also, if the furniture has been rearranged, a sighted individual should familiarize the student with the new arrangement.

To prepare the student for recess, the educator or guide should orient him or her to the playground and play equipment. Again, minimal distractions produce the best results. Certain areas on a playground can be dangerous for a blind or visually impaired student. Several options can make the playground safer. Probably the least desirable of these is assigning an adult aide to "shadow" the student. Since recess gives the student important time to socialize, allowing the blind or visually impaired child to have direct access to peers without an intervening adult seems best. Some students have succeeded with an assigned buddy or group of buddies with whom to play. However, the handicapped student should not rely too much on these friends. If the blind or visually impaired child always has to be entertained and "taken care of," the other children may resent it.

Adapting certain structures can make the playground area easier for the student to move around in. For example, sand, cedar wood chips, or rubber matting placed under and around the equipment can provide a color and/or tactile clue for the student to locate the more hazardous areas such as the swings and teeter-totter. Some students, especially the very young, may need the structure of adult-organized games to foster involvement at this time.

Field Trips

Field trips with a visually impaired student may require a small amount of special planning before the departure date. As helpful tactics, the teacher can advise the field trip site staff that a visually impaired student will be in the group and request that the site staff verbalize demonstrations, allow students to touch exhibits, and allow them to stand close to the action. The blind or visually impaired student may need to use a sighted guide, especially when traveling in unfamiliar or crowded areas. Some visually impaired students may have difficulty adjusting to changes in light. Photophobia (sensitivity to bright light), or the inability to see in low light, may also create problems for some vision-impaired students. This may be apparent especially when the student participates in activities outside the school setting.

Independence, an important status for blind and visually impaired students to reach, causes some of them great difficulty. The natural tendency to lend a helping hand sometimes gets the better of caregivers and teachers, who end up doing most of the task in the name of helping. It can be difficult to control this urge, especially when time is important. If the student hopes to become independent, everyone must provide daily opportunities for him or her to practice self-help skills.

Blind and visually impaired persons can learn to perform most daily activities independently. Often, instruction in techniques of daily living must be a curriculum consideration. Many types of adaptive equipment and methods are available to help blind and visually impaired persons.

Study Skills and Adaptive Media

Notetaking

Since reading from a chalkboard is impossible for the blind and notetaking can cause problems for many blind and visually impaired students, a variety of methods can help compensate. As mentioned before, the student may have to move closer or may need an in-seat copy of the material. A classmate or instructor can give the student notes. Perhaps the teacher can assign a classmate to make carbon or photocopies of the notes, or the blind or visually impaired student may choose to copy from someone, if appropriate. Blind and visually impaired students also can tape-record presentations as a supplement to notetaking.

Some visually impaired students use a low vision aid or monocular magnifier. Coming in various powers, these telescopic aids can either be hand held or spectacle mounted. These lenses help students receive enough magnification to read the chalkboard while from their seat.

The instructor should avoid using colored chalk when writing on the board and should keep the boards clean. Good contrast is the key. Too much information should not be crowded on the board. Also, it helps if the teacher dictates as he or she writes on the board. Some visually impaired students read cursive handwriting with difficulty, and teachers may need to print material on the board. Sighted students may benefit from these adaptations as well.

The teacher should guard against glare, which may affect the student's ability to see the board. The teacher's standing with his or her back to the windows or any light source may cause a silhouette. Not only will it be uncomfortable for the visually impaired student to look into the light, but it also will greatly reduce what the student can see. Since certain eye conditions may cause the child's vision to fluctuate, a student may see better on certain days than others. Stress, fatigue, general health, and motivation can play a role in what the student will be able to see.

If the student hopes to become independent, everyone must provide daily opportunities for him or her to practice self-help skills.

Demonstrations

Detailed descriptions of demonstrations help visually impaired children. When possible, the instructor should allow the student to handle the materials before, during, and after a demonstration. The student should be allowed to change positions for better viewing. Sometimes it is impractical to adapt visual materials to make them meaningful to a blind student. At these times, the instructor may need to give the student a different, but related assignment. For example, if the entire class makes a mural around a certain theme, the sighted students will cut out or draw pictures, while the blind or visually impaired might create a more tactile or literary aspect of the mural, such as sculpture or poetry.

Sometimes it is impractical to adapt visual materials to make them meaningful to a blind student.

Homework and Tests

Commonly, visually impaired students have difficulty reading purple ditto copies. Whenever possible, teachers may want to give these students a black and white photocopy of the ditto master. However, if the answers are given in red ink on the ditto master, they too will show up on the photocopy. Some inventive cutting and pasting or masking prevents this. Covering the page with a sheet of yellow acetate can solve the ditto problem. This makes the purple print look black and improves contrast. Report covers, available at stationary stores, work well for this purpose.

For the sake of legibility, the teacher can give visually impaired students typewritten materials. Other visually impaired students may be able to read handwritten materials if the print is large and dark and the information is sparse on each page. Some students may have difficulty reading cursive handwriting and may require printed information. Proper spacing equals the importance of print size for some students. When producing handwritten materials, keep in mind that black marker on white paper gives maximum visibility. Writing on only one side of the paper also improves contrast. If blanks need to be filled in, students should have space for large writing.

Because visually impaired students may need extra time to complete the work, the teacher may need to reduce the amount of homework if students fall behind. Timed tests generally are not appropriate for most blind or visually impaired students.

Blind and visually impaired students often find copying very tedious and time consuming. In order for a student to avoid spending an inordinate amount of time copying, he or she can tape-record the answer. A consumable copy of certain texts should be produced or obtained for visually impaired students to write in directly. When copying is unavoidable, a placeholder may help. This makes the process of reorientation to the page much quicker. A small, thin, metal sheet with a few magnetic strips works nicely for this purpose. These are sometimes available from craft stores and are used as placeholders for counted cross-stitching.

The blind or visually impaired student may need to use audiotapes whenever possible. If a teacher cannot obtain a test or homework assignment in the student's reading mode, a tape can be made. Blind and visually impaired students can also tape-record their responses rather than write them, especially for teachers who cannot read braille. Audio flash card

readers, frequently used in elementary classrooms, also have many applications for blind and visually impaired students.

Research Projects

Blind and visually impaired students may need to use a variety of techniques, materials, and equipment to gather information for research purposes. Tape-recorded books, tape-recorded encyclopedias, large print books, and braille books are available to them in limited numbers. The Instructional Resource Center has more information on how to obtain adapted reference materials (see Appendix A). Because only a few adapted materials may be available on a given topic, teachers might offer a wide variety of subjects for the student to choose from. The teacher may also help the student gather appropriate materials. A college-bound high school student may need to learn to use volunteer or hired sighted readers. Everyone should understand that the reader's sole responsibility is to read. The blind or visually impaired person needs to produce the end product.

Audiovisual Presentations

Allowing the visually impaired student direct access to a copy of an overhead transparency often makes learning easier. Rear screen projectors allow children to sit right in front of the screen, a location beneficial to many visually impaired students. If watching a filmstrip with subtitles, another child can read the information aloud to the class. When watching television or movies, the visually impaired child may sit very close to the screen as this will not damage the eyes. Due to certain vision conditions, some children prefer black and white televisions for better contrast and visibility. Previewing the film or being "talked" through it once before watching it with the class may also benefit the students. A follow-up discussion after a viewing and once again enumerating the main points may also prove useful.

Typing / Keyboarding

The majority of blind and visually impaired students should learn to type at an early age. By the time a student reaches middle school the teacher can expect typed reports, tests, and homework. Since many visually impaired students have difficulty with handwriting, developing typing skills increases writing fluency and legibility of assignments.

Handwriting

Understandably, many visually impaired students have poor handwriting skills. Sometimes no easy answers exist to the student's handwriting problem. If some visually impaired students find reading and writing cursive extremely difficult, they can substitute with print. Other students find writing cursive easier than printing because of the continuous flow of letters. However, cursive handwriting is generally more difficult to read than printing. This can create a situation where the student can write but not read self-written material. Even though it may be easier for blind students to type, they should still learn to write their names and be encouraged to practice this skill. Visually impaired students may require

special boldline writing paper, black markers, or No. 1 pencils in order to see what they have written. To secure adaptive materials, contact the Educational Services Center.

Spelling

Blind and visually impaired students often have difficulty with spelling. Blind students become accustomed to seeing words written with braille contractions more often than words written out letter for letter. As a result, these students often do not know correct spelling. Visually impaired students with obstructions in their visual fields may see only part of a word at a time. Poor visual efficiency may prohibit low vision students from analyzing words. They frequently need to rely on rote memorization to master the spelling of many words unsuitable for phonetic analysis. It is suggested that braille students practice both contracted and uncontracted spellings as part of their weekly tests.

When teachers adapt material, they should remember how long the student will actually use that material, and avoid investing too much time in a project that a student might use only briefly.

Maps, Charts, and Models

When dealing with models, the instructor should provide blind and visually impaired students with the "real thing" whenever possible. Even the most detailed description or model is, at best, a poor representation of reality. This is especially true since blind individual's perceptions rely on tactile input. Very few models feel even remotely like the real thing. When models are used, they should be proportionate and contain only essential details that are easily discernible both visually and tactually. Size, distance, and weight, as abstract concepts, often confuse blind and visually impaired persons. A student not exposed to an object in its entirety probably will not understand its form and scope. When appropriate, the instructor should illustrate for the student how the part shown by the model relates to the whole. Large print, braille, and tactile maps, globes, charts, and graphs are helpful when students need accurate verbal descriptions.

Models may be commercially made or teacher-made by using scraps of yarn and glue, for example. A raised line drawing kit available through the Educational Services Center or American Printing House for the Blind, tracing wheel, mylar (lamination film), and aluminum foil are all helpful tools for making graphic aids. Maps, graphs, charts, and labels can help the students. Only essential information should be included on maps. When teachers adapt material, they should remember how long the student will actually use that material, and avoid investing too much time in a project that a student might use only briefly.

Because blind and visually impaired children may have limited opportunities to learn by imitation and passive observation of others, by the time they arrive in schools simple social mores may be difficult to learn independently. Often these skills must be taught. Mannerisms such as rocking, pressing fingers in eyes, finger tapping, and so forth set the child apart from peers, and they cause the child to look bizarre. A confidential system of reminders that illustrates for the child the need to stop the activity may work well and not draw more attention to the behavior. Involvement with and exposure to other blind and visually impaired peers and adult role models also benefits these children.

Some students may require a structured environment to force interaction with peers. This could involve something as simple as asking the visually impaired student to pass out papers to the class or providing the student with a popular new game and teaching him or her how to play it.

On occasion, some blind or visually impaired students may be teased by their peers. This should be dealt with in the same manner and with the same degree of concern as any other teasing observed within the school setting.

Co-Curricular Activities

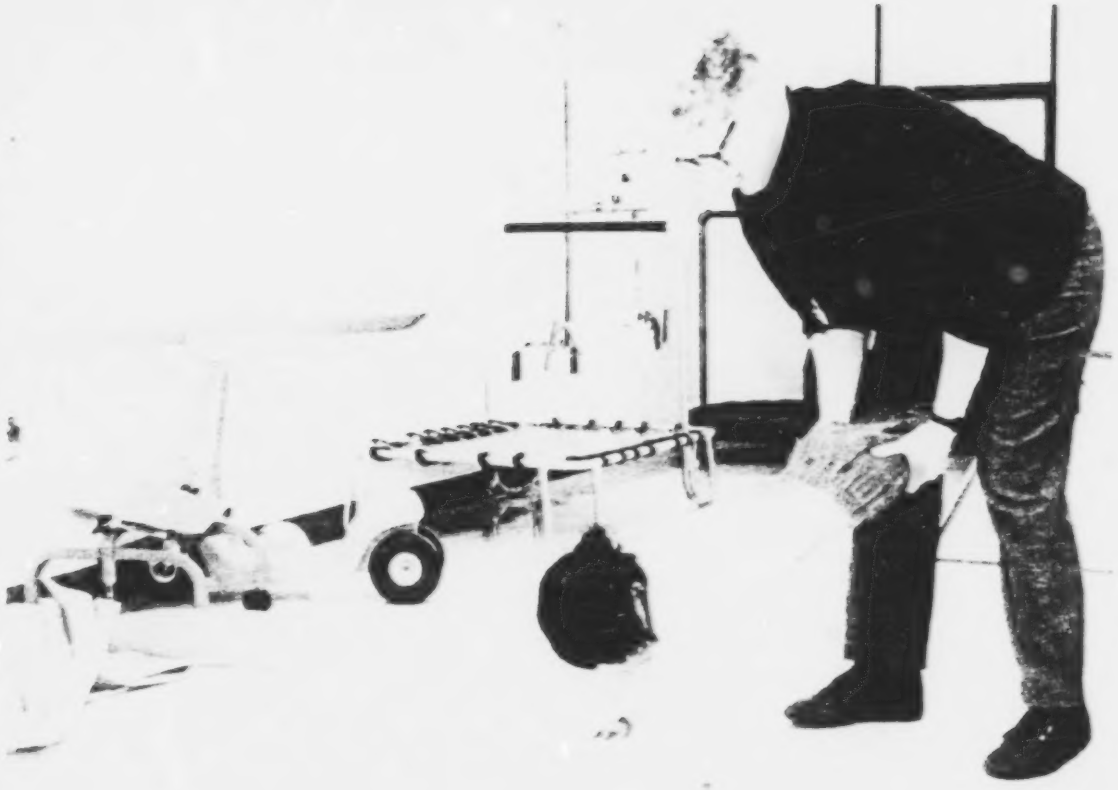
Co-curricular activities can help develop socialization skills in blind and visually impaired students. Most school programs provide a wide variety of co-curricular activities for students. Blind and visually impaired students can and should participate in many of the same activities as their sighted peers. Some, however, may need assistance or modifications in order to do so. A teacher of the visually impaired and the student can offer input to make appropriate modifications. Community-based recreational activities also provide opportunities for the student as well as school programs.

A student may avoid selecting certain activities because of a lack of information rather than a lack of interest.

While student interests and skills indicate the types of activities that should be selected, exposure to a variety of activities over a course of time benefits the student. Many students, especially those with a sensory loss, may lack everyday experience. A student may avoid selecting certain activities because of a lack of information rather than a lack of interest.

Early Childhood and Preschool Education

Introduction
Sensory Stimulation
Development and Skills
The Family



BEST COPY AVAILABLE

Introduction

Early childhood education refers to educational programs designed for children from birth to six years old. Such programs often serve children with disabilities and children at risk of a learning problem. These children usually are then served in preschool programs for children from three to six years old.

Learning that occurs early is crucial and affects the rest of a child's life.

Learning that occurs early is crucial and affects the rest of a child's life. This is especially true for a visually impaired child. Generally, most people learn through the visual mode. Visual disorders should be diagnosed early and appropriate interventions should begin as soon as possible. A variety of service delivery models can be used with visually impaired children such as parent education, home training, classroom instruction, or a combination.

Early education programs for young visually impaired children frequently involve these overlapping components: providing compensatory sensory stimulation; exposing the child to real, concrete experiences; and using co-active physical movement to develop motor skills for activities usually learned through visual modeling.

Sensory Stimulation

Sensory stimulation involves stimulating the senses to help the child become aware of the self, body-space, people, and objects in extended space. While the need for sensory stimulation is not exclusive to visually impaired children, it is of increased importance. The young visually impaired child needs complete development of all the remaining senses to the maximum extent to compensate for impaired vision.

The process of providing sensory stimulation should be a gentle, slow, and secure approach. New and unknown factors may frighten some visually impaired children. Certain children may be defensive to stimulation. Bombarding a child with sensory input or disregarding or diminishing his or her fears may be detrimental and cause increased defensiveness.

The process of providing sensory stimulation should be a gentle, slow, and secure approach.

The tactile sense, an important learning mode for blind and visually impaired children, may require some special attention. The fingertips and palms of the hands are usually the most sensitive to touch. One frequently used activity for tactile stimulation involves encouraging these children to put their hands in tubs of dry beans and macaroni, water, shaving cream, rice, and so forth. Playing with clay also encourages tactile involvement. Frequent handling of the child during caregiving and exposing the child to different textures will help the child learn to tolerate touching and being touched. Smelling and tasting a variety of sweet, sour, and bitter items, for example, will help olfactory and gustatory stimulation. Auditory stimulation can include such things as music, bells, chimes, and other common sounds.

Visual stimulation can aid a young child with residual or low vision in learning. Often a child with impaired vision does not learn to trust

remaining vision to gather environmental information and will use other senses and methods exclusively. Using even a little bit of remaining vision can enhance the child's developmental progress. The child needs encouragement to examine items, track them, and locate them visually. The child can hold things close to the eyes to look at them unless there is a danger of poking or injuring the eye with the object.

Many ordinary objects or activities can stimulate the senses of a visually impaired child. A certified teacher of the vision impaired can offer concrete suggestions for sensory stimulation. A certified teacher of the visually impaired or the district's director of special education or designee can provide additional information and suggestions. Also, many available manuals, kits, and lists can aid parents or teachers in developing a program of sensory stimulation (see Appendix B).

Real Experiences

A visually impaired child does not automatically develop an accurate "picture" of the world. He or she needs systematic exposure to as many normal, everyday activities and experiences as possible. For example, most preschools have a "play" kitchen with utensils and equipment proportionately sized to young children. Because visually impaired students need to experience tactually and aurally what they cannot observe visually, they should play with actual kitchen objects, within the bounds of safety. They need to play with real household objects to understand that these objects exist. Parents also need to involve the child in daily household activities and family outings. The child should be encouraged to talk about these activities and experiences with teachers and parents. As involvement with the visually impaired child continues, talking through activities with the child will become second nature.

A visually impaired child does not automatically develop an accurate "picture" of the world.

Co-Active Movement

Co-active movement can help the visually impaired child benefit from involvement in many normal activities. A visually impaired child cannot simply be told to do something and be expected to know how to perform the activity. An example of this is brushing teeth. Sometimes the child needs to be "put through the motions" physically. Climbing a ladder, swinging, and playing a game are all examples of times to co-actively move a child through an activity.

Development and Skills

The Oregon Project, an early childhood program designed for blind and visually impaired learners, is commonly designed around six developmental areas. Each of these areas provides concerns of particular interest to those working with visually impaired children.

Cognitive Development

Providing as many concrete experiences as possible can help the visually impaired child develop cognitive abilities. For example, when sighted children want to learn about something such as a dog, they watch it or look at a picture of it. However, a visually impaired child would need to touch, smell, and pet the dog in order to "know" it.

A visually impaired child may develop one concept or skill but not know about some item directly related to that activity. For example, a child may be able to count to ten but not be able to count ten pennies. Because visually impaired children rely on nonvisual or impaired visual input, they may pick up their concepts sporadically and have gaps in incidental visual learning. Parents or teachers must be aware of these fragmented or splinter skills. A visually impaired child should not be assumed to have prior knowledge or skill generalization. A skill or "knowledge" needs thorough evaluation to confirm that the child understands all relevant aspects.

A visually impaired child should not be assumed to have prior knowledge or skill generalization.

Language Development

Perhaps the most important suggestion is that educators who work with the child must remember to TALK. The child needs to hear about what is happening in the immediate environment. The teacher and family need to explain sounds and their sources. If the family and teacher do not talk to the child extensively, language development and vocabulary-related concepts can be delayed. To be beneficial, however, the talk must be paired with concrete experiences before it will be meaningful to the child.

Self-Help

Visually impaired people often do not learn self-help skills just by watching. Someone must teach the visually impaired child how to eat with utensils, pull pants up, put on a jacket, along with many other skills. Some important factors in teaching self-help skills follow:

- co-active movement enhances the learning of self-help skills.
- the natural setting in which events occur is usually the best environment for teaching.
- consistency of approach is necessary for self-help instruction. If three different individuals teach a skill three different ways, the child will become confused.

Socialization

Socialization skills for the visually impaired child must also be taught. The instructor should not expect incidental or automatic learning. The visually impaired child does not automatically know or learn that people look toward each other when they speak. Facial expressions may not be seen or understood. The visually impaired may not recognize visually friends and acquaintances. Items and events outside the personal body of the visually impaired child often do not mean anything to him or her, so the child resorts to mannerisms, or blindisms to fill time. The instructor should discourage these inappropriate body movements such as rocking, eye poking, and flicking of hands at their onset and substitute a meaningful and appropriate activity.

Promoting a child's interaction with the extended environment is an essential concern when developing beginning social skills for visually impaired children. Encouraging and requiring play with other children naturally facilitates socialization. The instructor's approach and expectations should be consistent.

Gross Motor Skills

Gross motor skills development particularly affects visually impaired children. Subaverage gross motor skills often develop in the child who does not have the visual motivation to move toward objects in the environment. The child may need instruction on how to crawl, walk, and run, for example. A good movement program can promote more normal development. Physical and occupational therapists or an orientation and mobility specialist can offer advice about developing programs to remediate some of these concerns. Movement through the environment must be encouraged at every developmental stage. Movement also encourages early and appropriate development of spatial and orientation concepts vital to independent mobility.

It helps for those involved to remember that the visually impaired child is first of all a child, a child who happens to have a visual impairment.

Fine Motor Skills

Educators sometimes neglect the crucial development of fine motor skills. A child with limited vision relies extensively on fine motor skills to explore and manipulate objects or items seen or observed by the sighted child. Fine motor skills, particularly finger strength and agility, are crucial for braille reading. The use of digits, both individually and independently, will impact on a student's later ability not only to manipulate the every day objects of life, but to manipulate all braille tools. Retarded development of fine motor skills seriously hinders the development of a visually impaired child.

The Family

Communication between family and professionals becomes particularly important when the child is old enough to enter school programs. As the family and the school district prepare to develop the child's individual educational program, the lines of communication must be kept open for a smooth and orderly transition from home and family education to school programming.

During this time, parents attempt to deal with their child's impairment and development. This is an important time for professionals to listen and perhaps set up meetings with other parents of visually impaired children as a means of support. It helps for those involved to remember that the visually impaired child is first of all a child, a child who happens to have a visual impairment.

Reading and Language Arts

Reading Readiness
Different Reader Adaptations
Reading Technology for Print
Reading Technology for Braille
Language or Literature Classes
Listening and Writing Skills
Computers

BEST COPY AVAILABLE

Reading Readiness

The ability to read is basic to academic learning for a blind or visually impaired child. Literacy provides a foundation for successful independent living. This section is meant to be used in conjunction with the DPI's *A Guide to Curriculum Planning in Reading and Language Arts*.

Acquiring reading skills begins at an early age and involves many factors. Basic concepts learned early can have a life-long influence. Some of the key factors contributing to reading readiness for blind or visually impaired children include

- auditory perception and discrimination,
- tactual discrimination,
- visual discrimination,
- early environmental experiences,
- normal childhood home experiences,
- normal childhood community experiences,
- normal childhood social experiences,
- concept development, and
- orientation to people and things.

Normal life experiences may be the most important factor in the prereading development of a blind or visually impaired child.

The Importance of Experiences

Normal life experiences may be the most important factor in the prereading development of a blind or visually impaired child. Building concepts in the repertoire of the visually impaired or blind child requires deliberate undertaking. Because so much of learning occurs by seeing, those who have impaired or nonexistent vision may have delayed or retarded development.

A preschool program emphasizing normal experiences and concept development lays the foundation upon which to build a successful beginning reading program. Special attention to concept development and experience exposure should begin as soon as the child is diagnosed as visually impaired or blind. This means taking the child places, talking to the child frequently, helping the child explore objects in the environment, and providing stimulating environments at every opportunity.

A solid vocabulary for reading depends on early language development. Language development for a visually impaired child must be related to real experiences. "Verbal unreality" can result if a blind or visually impaired child uses words but does not experientially understand what they mean. A speech and language clinician can help identify language deficits related to development of reading skills. A visually impaired child with a solid experiential background acquired during infancy will likely develop successful reading skills.

Preschool or Kindergarten Activities

Preschool or kindergarten reading teachers can include low vision students in their regular reading programs, particularly if a teacher of the visually impaired is available for consultation or instruction assistance. For the braille reader however, a specialized pre-reading program, carried out

under the guidance of a certified teacher of the visually impaired, will be necessary. Once braille readers acquire the necessary skills, they can often be completely incorporated into the regular classroom reading program. It may be desirable to allow beginning braille readers to remain in the class for certain reading activities that foster concept development and other pre-reading skills. Students should continually work with the certified teacher of the visually impaired at beginning braille reading. This guide does not recommend enlarged print textbooks at this level because often they are not reproduced in color, the regular print size for kindergarten is often large enough for many low vision children, and enlarged-print books may be cumbersome. The teacher should consult a certified teacher of the visually impaired about the appropriateness of the beginning reading program for blind and visually impaired learners.

Most prereading classroom experiences can be adapted for the visually impaired or blind child. Often, the child with vision loss will need nonvisual input to succeed in the activity. Increasing verbal explanations of activities often helps. Kindergarten-level reading books and materials are not usually available in braille because they consist primarily of pictures.

Movement games are important for developing prereading skills, particularly for visually impaired children. When the class plays movement games, the teacher should teach the movements to the blind or visually impaired child, moving the child's body parts through the actions when necessary. Assigning a classmate as a partner may help.

For paperwork activities the teacher should try adapting the page with black markers for the low vision student or with textures or raised lines for tactile representations for the blind student. Raised lines can be made by tracing the lines on thick paper with glue, leaving it to dry; or with strips of yarn dried in lines of glue. Real objects, however, work better than line representations or models of objects.

If teaching students about letters or numbers, an instructor can enlarge and/or emphasize the example for the low vision student. A multisensory approach combining auditory and tactual modes with vision use works well. For the blind student, the teacher of the visually impaired can assist with ideas and adaptations. If the school district does not have such a person, the teacher can contact the Educational Services Center (see Appendix A).

A child with low vision may need special attention to develop the following visual skills for efficient use of residual vision:

- tracking
- discrimination
- figure-ground perception
- closure
- field-use

Practice with these skill areas may improve the student's abilities. Coloring between the lines, picking one item out of a group of many on the page, completing half-finished pictures, and choosing the item that is different on the page are some ways to remediate these skill areas. Because no two visually impaired children see the same way, the teacher needs to consult a teacher of the visually impaired for specific suggestions related to a child's particular vision condition. This might include a functional visual efficiency assessment.

Most prereading classroom experiences can be adapted for the visually impaired or blind child.

Motivation plays a key role in a child's ability to develop beginning reading skills, especially for visually impaired and blind children. If reading does not excite the child, learning to read will be a long and laborious process. Instilling a sense of excitement can increase the chances for success.

Different Reader Adaptations

Print Readers

Students who have a visual impairment but have some useful vision sometimes need only minor adaptations to succeed in a regular classroom reading program. Each child will require individualized adaptations. Some adaptation suggestions follow:

- some children require additional lighting to maximize their visual ability.
- other students need subdued lighting
- some students work well on a slanted desk top or board.
- many visually impaired students need preferential seating to see the chalkboard. The teacher should ask the student about preferred seating or adaptations. Often the student will be able to express what works best or what the special needs are.
- a distance magnifier may help some students read a chalkboard.
- another student can share notes from the board, or the teacher can prepare a copy of the notes for the student.
- verbalizing what is written on the board often helps all the students in the class, particularly the visually impaired child.
- an optical or electronic low vision aid may be required by some print readers.

Motivation plays a key role in a child's ability to develop beginning reading skills, especially for visually impaired and blind children.

Many print size options exist for reading materials. In the younger grades (K-3), the print in a regular print text is often large enough for visually impaired students to see. One problem with written text at this grade level may be that picture descriptions and captions are often too small. With severe visual difficulties and/or the older grade textbooks, a student may need enlarged print. A certified teacher of the visually impaired should determine the appropriate print size. The teacher should contact the district's special education director or designee to proceed with this. When a print size has been determined, the Educational Services Center can assist in obtaining the books.

Most textbooks are available in large print. However, large print texts are much bigger, more awkward to carry, and require more room on the desk or in the locker. Often visually impaired students do not want to appear different than their peers and are reluctant to use large print books. The pictures in large print texts are generally in black and white and often unclear. Assigning a visually impaired student to regular print in addition to large print is sometimes suggested, so the student can use the regular

print for pictures and the large print for text. Workbooks and studybooks are also available in large print. Again, these are larger and more cumbersome than regular print.

Reading Technology for Print

A wide variety of aids, appliances, and adaptations are available to help students read. These include magnifiers, reading stands, audio flashcard readers, closed circuit televisions (CCTVs), high or variable intensity lights, and place and page holders. Lighting can determine a student's ability to see the written page. It often helps to highlight, separate, or border smaller portions of a page. A slanted reading stand may reduce neck fatigue and improve posture when the student needs to get close to the print.

One audio flashcard reader, such as the Language Master, equals the size of a tape recorder. The device can serve as individual reading instruction for low vision students. Words, letters, or pictures can be typed, written, brailled, or colored on flash cards. An accompanying letter, word, or sentence can be audio-taped on the same card to correspond with the written message. The card is "read" by inserting it into the slot on the machine, which functions in the same manner as a tape recorder.

A closed circuit television (CCTV) is a television monitor attached to a camera. The camera magnifies the text and projects it on the television monitor. A standard CCTV is generally large, cumbersome, requires extra space, and can be awkward to operate. The picture may be black and white or full color, depending on the type of unit. A standard CCTV in one classroom may not meet student reading needs in other classrooms. A CCTV improves reading ease for many visually impaired students. However, general fatigue and eye strain may occur with prolonged use. A certified teacher of the visually impaired or the Educational Services Center can provide additional information about appropriateness or availability of standard CCTVs.

Miniature CCTVs also are available for low vision students. These completely portable devices will run on AC or battery packs. This kind of portability is extremely useful for the visually impaired student who needs to travel within the school or community. Most miniature CCTVs offer three different levels of magnification, and these generally meet the needs of the visually impaired students.

The student may need to combine picture clues, context clues, word-form clues, phonics, and sight vocabulary in order to read. The teacher may need to provide added time for reading instruction and practice. By combining regular classroom instruction with adaptive devices and modifications, the classroom teacher, in consultation with a teacher of the visually impaired, can provide a successful reading program for a low vision student.

Braille Readers

Braille continues to be the most widely used form of reading for blind individuals. Braille is a system of raised dots written on heavy paper. The configuration of dots is a variation on the three-dot-tall, two-dot-wide "cell." Because braille requires more time to read and takes up much more space than does print, a contracted form called "grade-2 braille" is often used. This is a series of dot configurations representing the alphabet, punctuation, and 189 contractions for words, part words, and letter blends. Braille is generally taught to children beginning at the same time sighted students begin reading print.

A variety of available programs can instruct the blind learner in beginning braille skills. It is preferred that an educator of the visually impaired teach the student braille. Once the student has a working knowledge of braille, however, the classroom teacher can work with the student effectively. No previous or current knowledge of braille is necessary, but it would benefit the student if the classroom teacher learned it.

No previous or current knowledge of braille is necessary, but it would benefit the student if the classroom teacher learned it.

The following factors need to be considered when working with a braille-reading student at the primary level (K-3):

- Reading books include much nontext material such as pictures and puzzles which may not translate meaningfully into braille.
- A braille book will be considerably larger and more cumbersome than its print counterpart.
- A single print textbook may require several bound volumes of braille material to convey the same information.
- More desk space may be needed.
- Braille book pages do not correspond to print pages of the same book. Often a braille page will have two page numbers on it: one at the top identifying the corresponding print page and one at the bottom of the page listing braille page as it is reproduced in braille.
- Pictures are sometimes described in the braille text or may be omitted. This may be initially confusing to both the student and the classroom teacher.

Twin vision or braille overlay story books, which feature print and braille text, are available for younger children. This type of book is useful for the print-only reader, teacher, parent, or sighted classmate who is following along with the braille reader. Local libraries or the American Brotherhood for the Blind can be helpful in obtaining this type of book (see Appendix B).

Braillewriter and slate and stylus are two methods for writing braille. The braillewriter is similar to the sighted person's typewriter. It is a heavy, gray metal machine with seven keys, one for each dot of the braille cell and one for the space bar. Pushing different combinations of the six keys forms the dot configurations. Occasionally the teacher may need to move the student off to the side of the classroom if the noise from brailling disrupts the class. Use of a slate and stylus, while much less cumbersome, is a more advanced skill, and has many limitations to its use. (see also Language Arts).

The braille reader generally reads more slowly than a print reader. The student may require additional time to complete assignments, or shortened assignments may be necessary.

The reading teacher should be aware that spelling is also a problem requiring a braille reader's special attention. Because grade-2 braille is made up of a series of "contractions," the blind student may not learn the correct letter-for-letter spelling of a word without additional help. A similar problem may exist with word syllabification. A variety of reading tests or assessments are either adaptable or available for the blind. The American Printing House for the Blind has a complete list of these tests (see Appendix B).

Reading Technology for Braille

A variety of technological devices are available to aid the blind reader. The OPTACON II (OPtical to TActile CONverter), a machine that enables the blind student to read print, consists of a camera and a touch pad. The reader passes the small hand-held camera over the printed page, which converts the image into an electronic tactual image or pin prick sensations on the index finger touching the pad. This device is a technological advance enabling blind persons to access many "print only" items, including personal mail, newspapers, library card files, and magazines. Reading with the Optacon II is slow, and the machine is expensive and generally not useful for handwriting. Optacon II training can begin at about the third grade level and continue until the user is proficient. Since standard print is used the Optacon II user needs to learn the configurations of print letters (see also Appendix B).

Arkenstone, OSCAR, and the Kurzweil/Xerox Personal Reader all use newer optical character recognition (OCR) technology to help the blind reader access print. OCR systems read print and translate it into synthesized speech, braille, or large print output.

Another reading accessory is the personal Kurzweil/Xerox Personal Reader. This machine "reads" the print book using synthesized speech. The reading rate varies depending upon the system and the user's skills. The OCR reading systems are quite expensive, but the price is expected to drop as the technology generalizes to other applications. Many other computer adaptations are also available to help the blind and visually impaired read. Since changes in this field occur rapidly, the teacher should remain updated on the newest technology available today (see also Computers).

Auditory Readers

Occasionally a blind or visually impaired student is an auditory reader, which means listening to someone else reading the text out loud. This may be because the student's vision loss is so recent that braille has not yet been learned, the student is unable to read braille because of poor tactile sensation, or print is inaccessible for this student. Regardless of the reason the student cannot read, he or she can often participate fully in the class as an auditory reader. The teacher should take some adaptive measures to

ensure that these students participate. When the visually impaired students need to receive, process, and learn information, it is not important how they access that information. For auditory readers, being read to or hearing the information on tape benefits them. The teacher can use textbooks in cassette form exclusively or in conjunction with large print or braille texts. With these, a student can listen to and process the needed information.

Regardless of the reason why the student cannot read, he or she can often participate fully in the class as an auditory reader.

The students can take tests in an oral form with the teacher or other person reading the questions. Parents, teachers, teacher aides, or student peers can serve as readers for auditory learners. For example, college students often hire readers. A teacher of the visually impaired should offer advice about hiring such and training readers. A tape recorder can also be used for tests or for homework. The questions could be recorded on tape, and the student could then tape responses.

Language or Literature Classes

Language and the ability to communicate are elementary to the human experience. For the blind and visually impaired learner, the need for language and communication skills equals that of their sighted peers. The study of literature, language, listening, speaking, and writing for the blind and visually impaired may, however, require some adaptation of materials. This section should be used in conjunction with the DPI's *A Guide to Curriculum Planning in Language Arts*.

Instruction in language and grammar usage should pose no problem for the blind or visually impaired learner. Adaptive teaching methods are seldom necessary unless the child has an additional impairment.

The main requirement for literature classes is securing the reading material in the appropriate reading mode for the student as well as providing adapted tests and worksheets. Taped library material is often more accessible than braille or large print. Many titles are available from the Regional Library for the Blind and Physically Handicapped in Milwaukee (see Appendix B). Local public libraries can secure large print novels for upper elementary or middle school readers from a statewide collection.

For the blind and visually impaired learner, the need for language and communication skills equals that of their sighted peers.

Certain language activities lend themselves to adaptations for visually impaired students better than others. For example, diagramming sentences would be overwhelming to most braille and large print users. Also, some research exercises present special problems because of a lack of adapted research material. However, with the advent of CD-ROM (Read-Only Memory) technology, in conjunction with speech synthesis, more research and reference material becomes available.

Several language assessment tests are easy to use with visually impaired children because they are available in braille, tape, or large print, or they can be easily transcribed. These include the Test of Language Development (TOLD), the Test of Written Language (TOWL), and parts of the Wide Range Achievement Test (WRAT) (see also Assessment).

Foreign Languages

Many students in upper elementary grades and high schools take a foreign language as part of their studies. Visually impaired or blind students should also have that same opportunity to study foreign language. Visually impaired students can successfully learn a foreign language with relatively few adaptations.

Schools can purchase or produce texts and other needed materials in the learner's reading mode. The low vision learner may need large print worksheets and/or tests. It often helps to have a taped copy of the text available, as well as the print or braille copy. The local teacher of the visually impaired or the Educational Services Center can provide these (see Appendix A).

Speaking in the foreign language should not pose problems. However, the visually impaired or blind learner may find using the phonetic alphabet and learning to write more difficult. Using keyboarding for assignments should ease communication between teacher and student. For most commonly taught languages, braille symbols can accommodate the phonemes and symbols of the language.

The teacher and the school need to prepare early when scheduling a visually impaired or blind student in a foreign language program. The expertise of the Educational Services Center can aid in information gathering and materials acquisition.

All students need to develop and hone their listening skills, but visually impaired or blind students especially need to develop these crucial skills.

Listening and Writing Skills

Of paramount importance in a language arts program is the listening skills curriculum. All students need to develop and hone their listening skills, but visually impaired or blind students especially need to develop these crucial skills. Even for the very young child, listening should be stressed on a consistent basis. From an early age children need to work on skills such as auditory discrimination and sound localization skills. Good listening supports the development of reading, writing, and speaking vocabularies. Preferably, listening skills are of paramount importance to not only the pre-reader, but to all blind and visually impaired people.

Imagination and creativity can produce a variety of means for developing and enhancing listening skills. Activities range from storytelling and experience stories to advanced listening programs. The following suggests some activities to encourage listening:

- storytelling and story sequencing,
- role playing,
- art, music, and drama activities,
- small group projects,
- learning centers,
- following directions,
- compressed speech,
- playing games,

- commercially produced listening programs, and
- tapes and records.

Having students learn how to operate equipment such as tape recorders and cassette players can motivate them to listen well. Computer technology also provides opportunities for improving skills by using speech synthesizers and compressed speech. Audio equipment which accelerates or compresses speech is commonly used by blind and visually impaired listeners. Some adaptive listening equipment is available from the American Printing House for the Blind (see Appendix B) and on loan for qualified persons from the Library for the Blind and Physically Handicapped in Milwaukee.

One assessment test used frequently for listening skills is the auditory subtest portion of the Illinois Test of Psycholinguistic Abilities (see Appendix B).

Public Speaking

Public speaking can intimidate any student studying the language arts including the blind and visually impaired. Public speaking is one area of academics in which the visually impaired and blind can compete equally with their sighted peers. When preparing for forensics competition, the instructor should pay attention to logistics. The students may need to be oriented to the room where they will present their speeches. Everything normally available to the sighted speaker should be available adaptively to the blind speaker. Special attention and coaching for affect may be necessary for some blind participants.

Creative Writing

Creative writing can provide many joyful and fulfilling experiences during any student's school years. If certain conditions are met, visually impaired and blind students can compete with their peers in this area and also feel the excitement of this type of creativity.

Tapping a child's creativity can challenge the teacher and his or her teaching strategies. Use of typewriters or computers often makes creative writing a pleasant experience. Children can develop their creative skills by using a tape recorder to record stories, poems, and so forth. The teacher needs to assign writing to enhance imagination. He or she should also allow visually impaired learners to use the mode of expression in which they feel most comfortable and most successful.

Creative writing can take many forms. Some of these include the following:

- journals
- diaries
- anecdotes
- sketches
- autobiographical accounts
- biography
- monologue
- real or imaginary dialogue
- short story
- novels
- riddles
- puzzles or jokes
- poetry
- personal essays

Many experiences can inspire or encourage students to write creatively. Music, smells, and tastes can serve as such an impetus. Writing contests can also pique the visually impaired student's interest in creative writing.

Spelling

Spelling may prove difficult for blind and visually impaired learners. However, expectations should not change because the student is blind or visually impaired. Much rote repetition, memorization, and diligent practice can help the blind or visually impaired student. A copy of *20,000 Words* or a similar spelling dictionary can aid the student with these tasks. These are available in braille, large print, and regular print.

Spelling assessments available for adaptation for the visually impaired and blind include the Gates-Russell Spelling Diagnostic Tests, Peabody Individual Achievement Test, and the Test of Written Spelling.

Handwriting

Sometimes it proves advantageous to place less stress on handwriting and to emphasize alternative modes of communication instead.

Handwriting forms an important part of communication. Since handwriting closely relates to self-concept, the teacher should make responsible decisions about how and if a student should write. Visually impaired and blind students can have difficulty with handwriting because of poor eye-hand coordination. Handwriting for the blind student is generally impossible, although some teaching methods for it have been developed.

Sometimes a totally blind person should be expected only to write his or her signature. A legally acceptable signature may begin as a stylized "doctor type" attempt, where the first few letters are legible and then the writing drops off and becomes illegible. This signature usually can be perfected. Signature guides and raised line paper are helpful tools for teaching handwriting. These are available from the Wisconsin Council of the Blind and Howe Press. For additional information, contact the school district's teacher of the visually impaired or the Educational Services Center.

When deciding whether to teach handwriting to a low vision student, the instructor should consider the following:

- How much handwriting should be taught?
- Should cursive or manuscript be stressed?
- What is the potential for efficiency of the handwriting skill?
- What is the potential for use of the handwriting skill?
- What is the learner's level of motivation to develop the handwriting skill?

Sometimes it proves advantageous to place less stress on handwriting and to emphasize alternative modes of communication instead. Many students will find keyboarding a more viable alternative.

Keyboarding

For a blind or visually impaired student, keyboarding is probably one of the most liberating technologies available. Keyboarding, a survival skill for visually impaired students, can enable the visually impaired or blind student to communicate with sighted peers in the classroom. Reasons for teaching keyboarding include facilitating communication with classroom

teachers, peers, friends, and family; giving students an opportunity to take and leave notes and messages for others; enhancing spelling skills; motivating students to read; and providing access to computer technology for the visually impaired.

Visually impaired students should have the skills to type homework by the time they reach middle school.

Students can start learning keyboarding as early as the third or fourth grade. Visually impaired students should have the skills to type homework by the time they reach middle school. Students can also use keyboarding to take tests and complete homework. The OPTACON II, CCTV, and Kurzweil/Xerox Personal Reader can all be used with a word processor to proofread text.

When learning keyboarding skills, the student should get a thorough tactual orientation to the typewriter or computer keyboard. Keyboarding instruction manuals are available in large print, braille, or recordings on tape. The following suggestions may help when teaching keyboarding to visually impaired and blind students:

- have the student copy material from a variety of modes.
- use appropriate modifications such as reading stands, light probes, and position cues.
- have the student compose at the typewriter or word processor.
- use recording machinery.
- require the student to practice setting a variety of formats, including centering, tabulation, spacing, outlining letters, and so forth.
- have the student count the number of lines down from the top edge of the paper to set margins on the word processor or typewriter.
- if using a typewriter, use a backing sheet which extends to the left or right of the page being typed. Put a heavy black line or row of braille dots at the desired distance from the bottom of the backing sheet.
- check the ribbon periodically to make sure the student is not typing blank pages. Use carbon paper to avoid typing blank pages in case the ribbon does not work.

Slate and Stylus

Braille slates and styli are devices specifically for braille users, enabling them to access tools comparable to a sighted person's paper and pencil. The braille is written on a metal form board called a slate. The stylus is the blunted poker that punches the braille dots into the paper held in the slate. An efficient braille slate and stylus user can work the tools as fast as a sighted person can write with a pen.

The slate and stylus provide many conveniences to a blind person. Students generally can begin using a slate and stylus in fourth or fifth grade. Slates are far more compact than braillewriters and easier to carry and use during a lecture or other note-taking situations. They are also quieter than the braillewriter and less conspicuous. If a student can learn to use a slate, this skill should be encouraged. However, learning this skill can be difficult because it requires brailling backwards. It is also awkward for lengthy text. As teaching slate and stylus is a specialized skill, educators need to contact the local teacher of the visually impaired or the Educational Services Center for further information or help (see Appendix A).

Computers

Computer technology has opened many doors for blind and visually impaired learners. This section highlights information about computer technology for the visually impaired, but it is important to note here that much detail about specific adaptive computer technology is already obsolete by the time a manuscript goes to press. The field expands rapidly, and new programs and devices appear on the market almost daily. To get up-to-date information about computer support for a blind or visually impaired student, teachers may contact The American Foundation for the Blind, the American Printing House for the Blind, university training programs for vision teachers, Closing the Gap, Access Unlimited, the TRACE Center, or the Educational Services Center.

There are two categories of computer modifications: (1) adaptations to enable the visually impaired student to access regular computer systems and to use hardware and software other students may be using; and (2) special computer-related technology designed specifically for the visually impaired user.

To determine what is appropriate for an individual student, the following questions must be answered:

- what is the student's best learning mode (visual, tactual, aural)?
- what types of computers are readily available at school or at home?
- what is the nature of the work to be done?
- what types of adaptations work best with the computer being used?

There are many adaptations available to help blind or low vision students use regular Apple or IBM-compatible computers and software programs. Simple adaptations for low vision students include using monitor screen filters or large (19 inch or 21 inch) monitors, controlling the room lighting or monitor contrast, or using a different color monitor. Additional options include using special software programs designed to enlarge screen output of certain regular commercial programs (for example, Vista, Zoomtext); educational software or word processing software designed specifically to display large print on the screen (for example, Magic Slate II or Dr. Peet's Talkwriter); or programs that print enlarged print (for example Wordperfect 5.1).

Low vision students can use CCTV systems or large print display processors connected to computer systems to enlarge screen output. Blind students can use an OPTACON to read a normal computer screen.

The field expands rapidly, and new programs and devices appear on the market almost daily.

Numerous speech synthesizers are available for blind and low vision users. The quality and characteristics of speech output differs, and each is adaptable to different software programs. Many commercial software programs are advertised as "talking" programs. Often, these programs are useful for visually impaired students, but the teacher must make sure the program and the speech synthesizer are compatible and check to see what other available features are appropriate for the individual visually impaired user.

Specifically, cognitively disabled and certain physically impaired students may benefit from simple switches because switches eliminate the need for the student to manipulate a standard computer keyboard.

Equipment is also available to help multi-handicapped visually impaired students access computers. Depending on student needs, the following also can be helpful: Power pads, Touch Windows, expanded keyboards, Adaptive Firmware Cards™, Unicorn Board™, and keyboard moisture guards.

There is a virtual explosion of computer products designed specifically for visually impaired users. Computer devices such as the Braille and Print II and the M-Print attach to a braillewriter and computer printer to allow the blind user to key in braille text and receive both print and braille output. Several "paperless braille" systems (available for Apple or IBM-compatible computers) provide a separate braille display of computer screen text. As mentioned earlier, several OCR computer reading systems provide speech or braille access to printed material. Products such as Pocket Brailler, Braille 'n Speak, and BrailleMate provide convenient, portable note-taking ability on a small, quiet keyboard. They can be used later with speech, braille, or print output. The BEX program provides a "talking" word processing system that can be used with print or braille keyboard input to provide print or braille text output.

. . . computers can provide visually impaired students with innovative and exciting avenues for expression.

There is a specific "Code for Computer Braille Notation" available for the braille reader who wants to do computer programming. The manual is available from the American Printing House for the Blind.

The list of available products and product updates changes frequently. Teachers are encouraged to contact the sources mentioned earlier for the most current information about computer related products for the visually impaired.

Because of the technologies available today, computers can provide visually impaired students with innovative and exciting avenues for expression. These students can compete on a par with sighted peers and many also receive employment opportunities as a result of computer technology.

Eighth Grade Language Arts

Student: Annabella Aiken
(Braille Reader, no light perception in both eyes)

Lesson: Language arts activity in writing skills

Case Study

Annabella's vision loss occurred due to retinoblastoma (a malignant intraocular tumor that generally develops in infancy). Both of her eyes have been removed, and as a result she is totally blind. Annabella enrolled in South River School District. She is fully mainstreamed for all her classes and receives support from the vision consultant when needed. Annabella uses a computer system equipped with speech synthesizer, braille, and print output to complete much of her schoolwork.

Objective:

To improve reading and listening comprehension and to practice and develop precise writing.

Lesson Development:

Each student is asked to write exact directions for performing a sample task, such as brushing teeth, shooting baskets, or watering plants. (Adaptation: Visually impaired students could write directions using word processors with "talking software" programs.) The name of the activity should not be included in the directions, only the directions themselves.

The class members then exchange their written work with a partner. The partner reads the directions and then must identify the activity's name. (The blind student could then "read" the information using speech output through her synthesizer. Her partner would, of course, be able to read her work from the screen without adaptation. The reader records his or her guess on the disk and prints a copy to hand in to the teacher. Students could simply read their own work to their partners. The reader also acts as recorder for the listener and writes down what the listener thinks the activity is. The teacher may award prizes for the clearest, most concise directions.

Science and Mathematics

Scientific Concepts
Organization
Equipment and Materials
Mathematics Concepts
Text Modifications
Learning System Modifications

Scientific Concepts

Inherent in the development of scientific concepts is the ability to make effective observations. The process of observation, by nature, involves using the senses. Because the visual means of gathering data is eliminated or reduced for blind and visually impaired students, their instruction should be based on a multisensory approach that uses information acquired through the remaining senses. A laboratory-based science program lends itself well to this methodology. This section should be used in conjunction with the DPI's *A Guide to Curriculum Planning in Science.*

Organization

Proper classroom organization is important when a blind or visually impaired student must function independently within the setting. It will require the classroom teacher to prepare thoroughly for a successful science program.

Because of the great variety of apparatus used in the science classroom, the teacher should acquaint the student with the equipment at the onset of each unit.

Because of the great variety of apparatus used in the science classroom, the teacher should acquaint the student with the equipment at the onset of each unit. The familiarization process may take a blind or visually impaired student longer than it does sighted peers. Simply "going over it" during class may not suffice for the student to become proficient in an item's use.

The teacher needs to identify materials carefully with either a large print or braille label that will stay on. The student can use a variety of containers with distinctive textures and/or color properties for rapid, accurate identification. Containers that help organize also are convenient when used in a project involving small parts.

The contrast between the materials and the work surface often factors into the success of a visually impaired student's experience. Contrast and lighting needs can change from project to project within the same work station.

Sturdy, nonbreakable equipment and no-spill containers can stand a few more bumps and bruises than ordinary equipment in most labs. The lab also needs stocks of aprons, goggles, sleeve protectors, and disposable plastic gloves, as any lab does.

The level of independence to expect from a visually impaired child working in a lab setting will vary from student to student.

Safety and Independence

The level of independence to expect from a visually impaired child working in a lab setting will vary from student to student. Some children can pour liquids and measure them; others cannot. In some classes, such as chemistry, the safety of the students is primary. No easy answer exists to the question of how safe it is for a blind or visually impaired student to participate in handling dangerous chemicals, lighting bunsen burners, and so forth. Just like sighted children, each blind or visually impaired student has different abilities. The instructor should observe the student's abilities

to perform simple tasks such as opening containers, cutting, and pouring. Observation can aid in informally assessing manipulative skills. The older the student, the more he or she should be expected to do. A child who never has an opportunity to practice specific skills will never develop them. Expectations for students will definitely affect what they can learn.

If the student has assigned laboratory partners, the blind or visually impaired child can still carry his or her share of the load. For example, the blind or visually impaired student could be the group data recorder, provided he or she keeps actively involved in the experiment. The student gains nothing by standing back and passively recording other students' results. If the visually impaired student cannot function independently in the chemistry lab, the instructor could also request that a teacher of the visually impaired join the class. This teacher or an assistant may also act as facilitator for the group.

Methods

Whenever possible, visually impaired students need contact with real objects, organisms, and materials.

Whenever possible, visually impaired students need contact with real objects, organisms, and materials. A science laboratory need not exist within four walls. Most learners derive more meaning from a situation in which they become an active participant. Sometimes the only way for a blind individual to understand a concept is to have "hands on" contact.

Especially on the elementary levels, science programs and texts rely heavily on pictures. Making these pictures "come to life" creatively for a blind or visually impaired student may require trips to museums or other local resources. When using models, the teacher should keep them simple in scale and realistic as possible.

Equipment and Materials

Blind or visually impaired students can use some adaptive equipment in the science classroom. A variety of "talking" devices are now available. Speech-capable items such as scales, thermometers, clocks, and calculators could all have a purpose in a school science program. Several sources can provide braille clocks, watches, rulers, and so forth (see Appendix B). The American Printing House for the Blind produces some adaptive equipment for use in biology, including tape-recorded reference materials and a microslide cassette program (see Appendix B). Microscope use must be assessed individually. Many visually impaired students cannot use a microscope and will require a verbal description of each slide.

Science Activities for Visually Impaired (SAVI) has joined its sister project, Science Enrichment for Learners with Physical Handicaps (SELPH), to become the SAVI/SELPH program. This program can provide background material, material lists, lesson plans, evaluations, language development, and science extensions for about 40 science activities. Also available are complete kits of student materials such as record sheets, specialized equipment, and adapted measuring tools. The program also provides

student reading and listening resource materials lists. Although these materials were developed for young handicapped learners, the approach can be successful with many types of students.

Diagrams and graphs form a major part of some science programs. Adapting these materials while keeping them meaningful can be challenging. Getting input from a teacher of the visually impaired and also asking the student to help develop these materials can produce the most useful adaptations.

Frequently the best and most effective adaptive devices are teacher-made.

Sometimes visually impaired students can use the same materials as their sighted classmates. Often the only adaptations needed are enlarged copies; yellow acetate, which makes dittos look black; or key information highlighted with a marker. Crowding a lot of information on one page can create problems for some visually impaired students. In this case the teacher may need to produce a simplified version of the material that includes only the essential elements.

The authors suggest that teachers clearly identify the top of the graphic aid and see that the learner has the material oriented correctly when using it. Simplicity in format and curate verbal descriptions usually help students understand the material. The American Printing House for the Blind (see Appendix B) has produced a variety of tactile diagrams. However, visual information may not easily convert to tactile format, so some charts, graphs, or tables may not be adaptable.

Frequently the best and most effective adaptive devices are teacher-made. Teachers can adapt everyday equipment such as timers, rulers, and scales, for blind and visually impaired children by adding tactile, color, or large print properties. Creativity and experimentation can solve adaptations problems for the blind or visually impaired learner.

Mathematic Concepts

Successfully preparing children for an ever-advancing technological society requires a greater emphasis on mathematics at all levels of education. Some of the goals of Wisconsin's math programs include developing skills and knowledge of concepts necessary for decision-making, providing a strong background for a variety of vocational and educational options, and promoting problem-solving and abstract-reasoning abilities. The presence of a handicapping condition does not preclude the need for the development of these skills.

Creativity and experimentation can solve adaptations problems for the blind or visually impaired learner.

As with sighted students, the mathematics aptitudes of blind and visually impaired students will vary greatly from child to child. Studies have shown that, in general, students who are visually handicapped lag behind in computational skills. (Brothers, 1972 and Nolan, 1959)

Blind and visually impaired learners have some specific needs for adapted equipment, textbooks, and teaching techniques. If students are not provided with appropriate modifications, their achievement could suffer. The guide suggests that the math teacher preparing for a blind or visually impaired student first read the section entitled "Preparing to Teach a Blind or

Visually Impaired Student" to get an overview of particular concerns for students with vision problems. This section should also be used in conjunction with the DPI's *A Guide to Curriculum Planning in Mathematics.*

Basic Concepts

Some visually impaired learners use empty language. This means these children become adept at collecting and using words for which they have no concrete understanding. This can create problems when the student stops talking and starts doing. In the study of mathematics, one of the first areas affected by this phenomenon involves basic spatial concepts and vocabulary. These basic concepts are often difficult for blind and visually impaired students to develop, but they are critical skills. An understanding of and an ability to physically demonstrate spatial concepts such as above, below, and across are critical to the development of academic and self-help skills throughout a visually impaired person's life.

An understanding of and an ability to physically demonstrate spatial concepts such as above, below, and across are critical to the development of academic and self-help skills throughout a visually impaired person's life.

The formation of basic spatial concepts and vocabulary must begin at an early age. Without a solid background in this area, the student probably will not have much success in mathematics. If available, a teacher of visually impaired should test the student's knowledge of these basic concepts and share results with the classroom teacher. If deficits exist, then remediation needs to begin (see also "Orientation and Mobility" and "Language Arts").

Manipulatives

The teaching of mathematics can lend itself to using manipulatives or the student's physical handling of the object. Blind and visually impaired learners will greatly benefit from frequent physical manipulation of objects. It may help to provide the child with several containers with instructions on organizational techniques to keep small pieces orderly and properly grouped. These students can develop beginning counting, measuring, and computation skills with the frequent use of manipulatives.

Text Modifications

A few special considerations exist regarding the braille and large print texts. A special braille system, called Nemeth Code, is used for mathematics and science. This system differs markedly from the literary code used for ordinary reading material. Nemeth Code, much more complex than the literary code, requires special instruction for both the student and teacher.

Because of the structural configuration of braille and the fact that braille requires more paper to convey the same information as print, spatial arrangements often differ in the braille text from the print text. The braille text will probably fill several volumes, whereas the print text generally fills only one volume. Page numbers usually do not correspond.

Large print text also frequently requires additional volumes. Again, page numbers may not correspond to those in the regular print text.

Depending upon the degree of enlargement required, large print books may be cumbersome and inconvenient to carry. Large print can be difficult to use as it limits the amount of information a student can see at one time. This also causes a problem for the closed circuit television (CCTV) user. These students have the additional burden of needing to scan each problem thoroughly before beginning the required operation. Exponents, fractions, and function signs are generally written in a small print size which the student may find difficult to read.

Color is often used to communicate information in math texts. Obviously, color cannot be shown in braille other than to label items with color words. Large print produced on an enlarging copier is usually black and white and the pictures and illustrations are not always clear. Visually impaired children may need a copy of the regular print text to supplement the large print materials.

Sometimes certain portions of braille texts are almost impossible to convert into tactile means. In these cases, the teacher may need to use additional adaptive aids to provide that material for the student.

Adaptive Equipment

Sometimes certain portions of braille texts are almost impossible to convert into tactile means. In these cases, the teacher may need to use additional adaptive aids to provide that material for the student. The American Printing House for the Blind can provide a variety of educational aids for the mathematics classroom.

Braille and large print graph paper are useful both for graphing purposes and for teaching place value. Many blind and visually impaired students need some help in learning to keep numbers arranged in columns: graph paper works well for this. Long division and multiplication are particularly troublesome for students who have difficulty with spatial arrangements.

Some blind students may benefit from using a Cubarithm Slate and cubes. This device consists of braille number cubes that fit into openings on a form board. The student can easily change and move numbers as the need arises. Certain individuals, particularly those with poor overall spatial abilities, may continue to have difficulty after numerous adaptation attempts. These students may have more success using the talking calculator for complex operations.

The Sewell Raised Line Drawing Kit and the Graphic Aid for Mathematics are devices for making simple drawings and graphs. Braille and large print clocks, rulers, protractors, thermometers, number lines, number tables, scales, and timers are also available. The Educational Services Center or American Printing House for the Blind can provide these materials. Additionally, several types of talking devices are useful in a mathematics program.

The abacus has been used successfully by blind and visually impaired people for hundreds of years. Although use of the abacus has seriously declined in many areas since the advent of the talking calculator, it is still a marvelous tool for people trained to use it correctly. The Cranmer Abacus and instruction manuals are available from the American Printing House for the Blind. The abacus serves as a functional tool for everything from simple addition and subtraction to figuring percentages and square roots.

For teaching geometry and shapes, the American Printing House for the Blind carries Mitchell Wire Forms and Geometric Forms. Plain wooden, plastic, or rubber shapes work well for simple illustrations (see also Appendix A, Educational Services Center).

Learning System Modifications

Mathematics, in particular, may require some concessions in terms of the quantity of work assigned to a blind or visually impaired student. However, the teacher must still hold the student accountable for the content of the material. The purpose of the lesson also needs consideration. In some cases, the objective is to give the student practice in copying problems from his or her text and setting them up in the correct format. If, however, the goal for the student is to solve the problem, spending time copying does not serve the child's best interest. Providing the visually impaired student with a consumable copy of a text that she or he may write in directly may help. Timed tests are rarely appropriate for visually impaired learners.

Generally, blind and visually impaired students find it difficult to be absolutely accurate when measuring. Although this depends on the individual student, the instructor may have to make some allowances for the finer discriminations of measurement, as well as for graphing.

Chisenbop, and other types of exponential finger calculations, are useful techniques for blind and visually impaired students. Some schools have used these methods with elementary students for several years. A blind or visually impaired child should fit easily into the existing system. Aural and mental arithmetic should also be stressed.

Blind and visually impaired students will need to develop a system of money identification. It is better for the student to use real money rather than play money and to learn coin identification by size and weight. For example, the teacher can point out for the student that dimes and quarters have rough edges and nickels and pennies have smooth edges that are easily discernable and can aid in identification.

The American Printing House for the Blind produces several types of models for the teaching of fractions. Some of the materials currently used in the regular math classroom may also aid the blind or visually impaired student.

Mathematics, in particular, may require some concessions in terms of the quantity of work assigned to a blind or visually impaired student.

Computers offer many opportunities to the blind and visually impaired learner. Terminals with 19-inch screens and/or voice synthesizers paired with compatible software can put the student virtually on par with classmates in a mainstreamed setting. Visually impaired students may be able to read material that appears off-screen by using magnifying aids. Full monitor magnifiers or screen filters which increase contrast may help some students. Adjustable typing stands which bring copy in for close viewing frequently benefit low vision learners.

Assessments

The following mathematics assessments have been adapted for use by blind and visually impaired students:

- Key Math Diagnostic Arithmetic Test (American Printing House for the Blind)
- Wide Range Achievement Test (American Printing House for the Blind)
- Cooperative Sequential Tests of Educational Progress, (American Printing House for the Blind-braille, National Association for Visually Handicapped-large print)
- Piagetian Assessment Battery in Training Manual for Teachers of Visually Impaired (Stoetling Company)

All of the above tests have applications to assessment of blind and visually impaired students in mathematics. The Brigance Inventory of Basic Skills (Curriculum Associates), and the Brigance Inventory of Essential Skills (Curriculum Associates), while not specifically adapted for blind and visually impaired persons, do have appropriate components. (See "Assessment").

References

Brothers, R. "Arithmetic Computation by the Blind." *Education for the Visually Handicapped* 4.1 (1972), pp. 1-8.

Nolan, C. "Achievement in Arithmetic Computation: Analysis of School Differences and Identification of Areas of Low Achievement." *International Journal for the Education of the Blind* 4 (1959), pp. 125-128.

Fifth Grade Mathematics

Student: Joel Jaminson
(Low Vision 20/300) O.U. (O.U. denotes both eyes)
Lesson: Measurement Concepts and Skills

Case Study

Joel is an eleven-year-old boy, enrolled in the sixth grade at the Fitzgerald Middle School in the High Valley School District. Joel's vision loss is due to Albinism. His distance vision is at the level of 20/300 in both eyes. Joel currently uses some large print materials, in 18-point type, tinted lenses and, on occasion, a handheld magnifier. Joel is somewhat delayed in math skills.

He is currently mainstreamed into a fifth grade math class and often receives additional support within the Visually Impaired Resource Room. The resource teacher is responsible for all materials adaption within the math class. The following is a typical math lesson for Joel.

Objective:

To use and compare the inch and foot units for measuring length.

Lesson Development:

Activity 1. Have students work in pairs and measure each other's height in feet and inches. Provide students with a roll of adding machine tape, then have them cut a strip from the roll that is the same height as their partner. (Adaptation: Have low vision student measure partner by using adding machine tape. It may be easier if the student being measured lies down on the strip of tape, and the low vision student marks off spots at the partners head and feet with a straight edge. Once the partner gets off the tape, the low vision student can cut the strip at the marks.) Students then decorate their strips to represent their individual personalities, and they can fashion the finished strips into a bar graph for the wall or bulletin board of the classroom.

Activity 2. Focus attention on information about the inch and foot units. Divide the class into two groups. Have one group estimate selected distances in the classroom using the inch and the foot units. Then ask the other group to check these estimates by measuring. (Adaptation: adapt rulers by making examples in black and white to give better contrast.) Have the students remain in the same two groups, but now ask them to imagine that each group is a basketball team. Have them choose a team name as well. Them compare their different heights with those of the Milwaukee Bucks or the Wisconsin Badgers men's or women's basketball teams. Discuss why the measurements of the players appear in both feet and inches. Explain why it is often important to make the most precise measures. For example, it would be very difficult for a 6'1 player to guard a 6'10 player. Design a large chart of either their heights or the adult players' heights. (Adaptation: The chart may need to be done in black and white, for better contrast and readability.)

Activity 3. Tell students that when measuring to the nearest half-inch it helps to think of the ruler as marked off in half-inch units and to pick the mark closest to the end of the object. For measuring to the nearest fourth-inch, they can think of the ruler as marked off in fourth-inch units and pick the mark closest to the end of the object. To be sure students understand this procedure, have them draw five line segments to the nearest half and fourth inch. (Adaptation: adapt rulers with color coded increments. One-inch marks in black, half-inch marks in red, and fourth-inch marks in green.)

Family and Consumer Education and Social Studies

Relevance of Family and Consumer Education to the Visually Impaired
Purpose of Social Studies
Experience
Classroom Modifications

Relevance of Family and Consumer Education for the Visually Impaired

Family and Consumer Education is particularly relevant for a blind or visually impaired student. It introduces the student to basic skills that sighted students acquire at a much younger age. For the blind or visually impaired student, various aspects of food preparation, clothing and textiles, cleaning skills, housing and furnishing, personal development, and child development need to be taught. The teacher of the visually impaired and the teacher of the consumer education course(s) should work together to develop appropriate modifications for the blind or visually impaired student. Many special products are available which may assist the blind and visually impaired student. Following are some general guidelines.

Family and Consumer Education . . . introduces the student to basic skills that sighted students acquire at a much younger age.

Food Preparation

- "Dry measures" are the best way for the blind student to measure all ingredients.
- Use of fingers to see when a cup is full is acceptable. Encourage proper "washing up" before and afterwards.
- Use of pots with tall sides prevents splatters and spills, especially when frying.
- An electric range is safer because it lacks an open flame. It is also helpful to have dials on the front to make seeing and using easier. Some major department stores sell large appliances with braille markings.
- Raised dots can be used to indicate temperature ranges on stove dials. White glue generally works well.
- Oven mitts with long arms help prevent burns.
- Braille labels on 3x5 cards can make it easier to find and reuse foods.
- Braille timers or ones with large numbers are helpful.
- Plastic mixing bowls with nonslip bottoms or nonslip placements can be used to keep things from sliding off the table.
- Pouring or measuring over a cake pan keeps spills contained.
- The routine for dish washing should be explained: rinsing by dipping an object in a tub of water gets soap off successfully.
- Use a double cross method of wiping an area such as a table. Go left to right and back across the area, then up and down across the area.
- Wide mouth jars are easier to measure from than narrow ones.
- Bent measuring spoons fit more easily into jars and are levelled off more easily.
- Browned meat has a higher crackling sound than meat which has not been browned. Since "hearing" this degree of doneness is a learned technique, specific cooking times may be more useful.

Clothing and Textiles

- Magnetic pin holders are useful in sewing.
- A small block of wood taped on the sewing machine, a magnetic seam guide or masking tape on the sewing machine help control seam widths.

- Threading sewing needles may be difficult; "self-threading" needles, needles with jumbo eyes, or needle threaders are alternatives.
- Magnifiers which attach to the sewing machine are helpful for some visually impaired students. Magnifier lamps are also available.
- Sergers trim material automatically and can help if a student is able to see enough to avoid getting fingers caught.
- Finger guards for sewing machines are useful.
- Masking tape placed around the edge of a pattern can make cutting out the fabric easier.
- Serger pins or pins with colored heads are useful because they are bigger.
- Tape measures with large or braille numbers are available as are sewing gauges with holes for inch markings.

Cleaning Skills, Housing, and Furnishing

- Stains on clothing can be marked with a large safety pin for prewashing.
- Using spray cans directly on furniture or other items can be difficult for blind and visually impaired people. Have them spray onto the cleaning cloth or use liquids instead.
- The blind student should be aware that some cleaning will be difficult to perform and that additional assistance may be necessary.
- Changing lightbulbs and plugging in appliances can be learned and practiced.
- Many minor household repairs requiring screwdrivers, hammers, pliers, glue, and other tools can be taught. Teachers and parents should work together to provide the visually impaired student the opportunity to learn and practice these skills.

Personal Development

- Clothing can be labeled with braille sew-in labels made of metal. These labels are available through the Wisconsin Council of the Blind. Oufits to be worn together should be hung together, including jewelry and hosiery. Socks can be kept matched with sock sorters, or it maybe helpful to buy all the same colored dark socks. Shoeboxes or drawer dividers help keep items together.
- Body language can be discussed with blind and visually impaired students. Students should understand that they need to face the person to whom they are talking, making eye contact as much as possible.
- Grooming is important and helps make a good first impression. Styles can be discussed, with specific examples of what is appropriate and inappropriate. A sighted peer may be helpful as a shopping companion. It is important that blind or visually impaired students understand that as they mature, so do styles and appropriateness of dress and behavior.
- Flattering haircuts which require little care are best. Specific ways to use a blow dryer, curling iron, and other equipment need to be taught carefully.
- Managing money should be taught with a specific budget in mind. Labeled folders keep receipts and other documents together.

• Blind and visually impaired students should be taught to manage personal belongings in an organized way. Large print and braille books are heavy and awkward to carry. It would be best to locate this student's locker in a central location. A large canvas bag holds many items. Writing down all assignments in an assignment book is helpful. A long strapped purse which crosses over the body can be helpful and free up arms for cane use. Good organization can prevent a lot of frustration.
• Folding money for quick identification is helpful. Typed checks, large print checks, and raised line checks are available.
• A grocery shopping list should be organized according to departments within the store and typed if possible. If assistance is needed within the store, it is best to go at uncrowded hours and be prepared to wait if necessary.

Child Development

• Parenting and child development classes are important for the blind and visually impaired student. Since many parenting skills are learned visually, hands-on activities and explanations of child growth and development may be necessary.
• Family planning and birth control, venereal diseases, adoption procedures, and crisis intervention techniques should not be omitted from the curriculum. (See also "Health")

Home Economics Related Occupations (HERO)

Courses which introduce the sighted student to multiple home economics related occupations and which foster human relations, employability, and career development skills are appropriate for the blind and visually impaired students as well. It is essential that these students have the prerequisite knowledge and skills to be successful within the HERO program. (See also "Preparing to Teach a Blind or Visually Impaired Student," "Educational Services Center," "Low Vision," and "Daily Living Skills")

Purpose of Social Studies

The purposes for teaching social studies include
• keeping alive the nation's and the world's historical records.
• producing adults who contribute to society.
• helping develop a just and humane society.
• fostering intellectual development of students.
• meeting the ongoing needs of children and adolescents in a highly complex and changing society (Hartoonian, 1986).

A handicapping condition does not change a student's need to develop these ideals. Social studies can be adapted easily to the needs of a blind or visually impaired individual. A variety of teaching techniques, such as audiovisual aids, maps, charts, field trips, artifacts, and group discussions,

can facilitate this. The authors recommend that the social studies teacher preparing for a blind or visually impaired student also read "Preparing to Teach a Blind or Visually Impaired Student" in this guide to get an overview of particular concerns for students with vision problems. This section should be used in conjunction with the DPI's *A Guide to Curriculum Planning in Social Studies.*

Experience

For many years, social studies has been taught from an expanding horizons model—that is, starting from what is known and familiar to the child and moving to more global concerns. Young children base much of what they learn on watching others. The sighted population develops many concepts through passive visual observation. Many visually impaired children, however, do not have this advantage. Blind or visually impaired children may base their knowledge of the world on limited "hands on" life experiences. For example, unless an elementary-aged blind student has direct experiential contact with community helpers, he or she may have a very limited or misconstrued notion about the functions of common service providers such as police officers or garbage collectors.

Blind or visually impaired children may base their knowledge of the world on limited "hands on" life experiences.

As a result, the classroom teacher needs to gear instruction to a concrete "hands on" level. Social studies requires a vast supply of "real" materials. Attics, garages, friends, and neighbors are all sources of learning aids. Field trips and guest speakers with their supplies of paraphernalia are also excellent resources for the classroom teacher.

When teaching blind or visually impaired students, the teacher should not assume they have the background concepts on which to build. These children commonly have "splinter" or "scatter skills," which means they may know about or understand only part of the concept. Talking to the child is probably the only way to find out what she or he knows about a certain topic. Asking the entire class to "tell you what they know" about a specific subject may be a way of learning about a blind or visually impaired student's perceptions without singling him or her out.

Classroom Modifications

Group activities are common to the social studies classroom. When assigning the blind or visually impaired student to a group, the teacher needs to select partners carefully. These partners should allow the blind or visually impaired student to do a share of the work. If the group works on producing a project, the blind or visually impaired learner should participate at his or her own level. The blind child may not be able to draw pictures or clip photos from magazines, but she or he may be able to add three dimensional qualities to the group project or write an accompanying story as part of the effort.

For some students, being different from their peers is painful, especially during adolescence. Whenever possible, the teacher should minimize individual students' differences. Instead of only the blind or visually impaired learner doing a project in an adapted manner, several students could have this option. Or the group can do a project in which everyone can participate on the same level.

Textbooks, Materials, and Methods

Social studies texts, especially at an elementary level, rely heavily on pictures. Making these pictures meaningful for a blind student can be difficult. Describing a picture to the student is probably the simplest method to convey the meaning. For a child with a poor repertoire of experiences, however, this may not be enough. Bringing to life the meaning of the picture by using real objects or meaningful concrete examples will benfit not only the blind or visually impaired student but also his or her classmates.

Many older students succeed in social studies by using tape-recorded texts. To help the student use recorded materials, the teacher can provide print or braille copies of spelling lists, vocabulary words, study questions, graphics, and reference lists.

The concepts of distance, time, size, and weight are generally incorporated into social studies curriculum. Some blind and visually impaired children find these abstract concepts difficult to grasp. In these cases, the teacher can relate the idea in the beginning to the student's own body. Walking distances, lifting objects, comparing sizes, and considering lengths of time in terms of the student's own life are some methods of instruction.

Bringing to life the meaning of the picture by using real objects or meaningful concrete examples will benfit not only the blind or visually impaired student but also his or her classmates.

Maps

Maps often need some adaptations for blind and visually impaired students. The blind or visually impaired student must have developed spatial concepts in terms of his or her own body, the bodies of others, and the environment in order to understand maps of any form. If a child has poor spatial orientation, for example, she or he does not know right from left, a map probably will not be useful. Basic spatial concept instruction must begin at an early age and will be important for many aspects of the student's life.

Some visually impaired students can use the same maps as classmates. Once the student begins using maps, several adaptations can make them more meaningful. A marker can darken the map or highlight important sections if necessary. Hand-held magnifiers, enlarging copiers, and sheets of yellow acetate which darken dittos can all be useful.

The way the student approaches the task of finding a point on the map can determine his or her success. When the map contains much information, the instructor may need to give the student a hint in locating a specific point. For example, if the student tries to locate Cumberland, Wisconsin, the teacher might suggest looking in the northwest quadrant of the state. Some blind and visually impaired students may need to mark a point of reference

on their maps. A magnet and metal board or sticker works well for this. For students who can see colors, telling them to remember that bodies of water are blue and highways are black will be useful.

Tactile maps can be made or purchased for the braille student. When making a tactile map, a simple adaptation with a variety of tactile stimuli and few details works best. Some suggestions for working with tactile maps follow:

- pair the map with a verbal description that highlights the main features.
- always provide keys with the maps that explain the symbols and textures used.
- have students become familiar with the key.
- ask students to locate the various textures on the map by using the key.
- encourage the student to read with both hands.
- orient tactile maps horizontally, preferably so that the directions on the map correspond to compass directions.
- mark the top of the map clearly.
- preferably, do not hang tactile maps on the wall.

The MAVIS (Materials Adaptations for Visually Impaired Students in the Social Studies) Sourcebook 4 has some excellent suggestions for adapting maps, charts, and graphs. A teacher of the visually impaired can suggest appropriate additional modifications. Maps and related materials may be obtained from the American Printing House for the Blind. Various large print and relief maps and tape-recorded tutorial programs are available.

For some students, the use of maps and charts remains frustrating and limited, no matter what adaptations have been made. In these cases, the teacher should examine whether the individual needs this particular skill. The student may not wish to continue maintaining or developing this skill for use beyond the classroom.

For some students, the use of maps and charts remains frustrating and limited, no matter what adaptations have been made.

References

Hartoonian, H. Michael. *A Guide to Curriculum Planning in Social Studies.* Madison, WI: The Department of Public Instruction. 1986.

Sample Lesson

Second Grade Social Studies

Student: Sally Smith
Braille Reader (Light perception in both eyes)

Case Study:

Sally is an eight-year-old girl, enrolled in the second grade at the Whiteship Elementary School in Little Lake School District. Sally is fully mainstreamed for all classes. Sally's vision loss is due to Leber's Congenital Amaurosis. Her vision is at the level of light perception in both eyes. Sally has been involved in a formal school program since the age of three. Her primary reading method is braille with supplemental auding. Concept development has been stressed throughout Sally's programming and as a result she is very strong in this area. A teacher's aide has been assigned to Sally's classroom. Her major responsibility involves material adaptations under the guidance of the itinerant vision teacher. The vision teacher works with Sally one and one-half hours per day.

Objectives:

To understand 1) the concepts of spheres and globes; 2) the concept of a model's relationship to what it represents 3) the distinction between areas of land and water on both the earth and a globe.

Learning Development:

Activity 1. Show the students a picture of the earth. Ask them the following questions:

- What does this picture show?
- Who took this picture?
- Where was the person when she or he took this picture?
- What is the shape of the thing in this picture?

Have the students answer the questions in complete sentences. They should also state the shape and relative size of the earth. Either the students or the teacher can use a black marker to print the sentences on a white piece of paper that is attached to the picture of the earth. (Adaptation: Review with the visually impaired student the text beforehand, including the vocabulary.)

Ask the students to read the sentences aloud. Their answers should be similar to the following:

- This is a picture of the earth.
- An astronaut took this picture. (Some students might be aware that someone controlling a satellite, not someone necessarily in space, could also have taken the picture, but emphasize that the machine that took the picture is in space.)
- The person (or the machine) was in outer space.
- The earth is round and shaped like a ball.

Activity 2. When answering the questions above, discuss the concepts of *space* and *sphere*. Have the students locate objects in the classroom that are the same shape as a sphere.

(Adaptation: Instead of having the student look around the room, give to him or her a variety of spheres to examine.)

Activity 3. Prepare to have several models of familiar objects ready for class. Dolls and doll house furniture, model cars and similar objects are useful. (Adaptations: Use models and real objects, when possible. For example, a miniature chair and a similar chair in the classroom, a model car and a car in the parking lot, or a model bird and a live bird itself.) Direct the discussion and focus on helping the students to conclude that 1) a model is the same shape as the object it represents; and 2) a model is generally much smaller than the object it represents.

Activity 4. Show the class a primary globe. (Adaptation: Use a tactile globe for the VI student.) Either the students or the teacher can use a black marker to print sentences on a white piece of paper that is attached to the board or to a picture of a globe. Direct the discussion so that the students reach the following conclusions:

This is a picture of a globe. A globe is a model of the planet Earth. It shows land and oceans. The oceans are blue and the land is green or brown. When people want to find different places on the earth, they use a globe. (Adaptation: Explain to the VI student that differences in land and water are represented by texture and height.) Have the students locate land and water on the globe. (Adaptation: Have the sighted students use the tactile globe as well.)

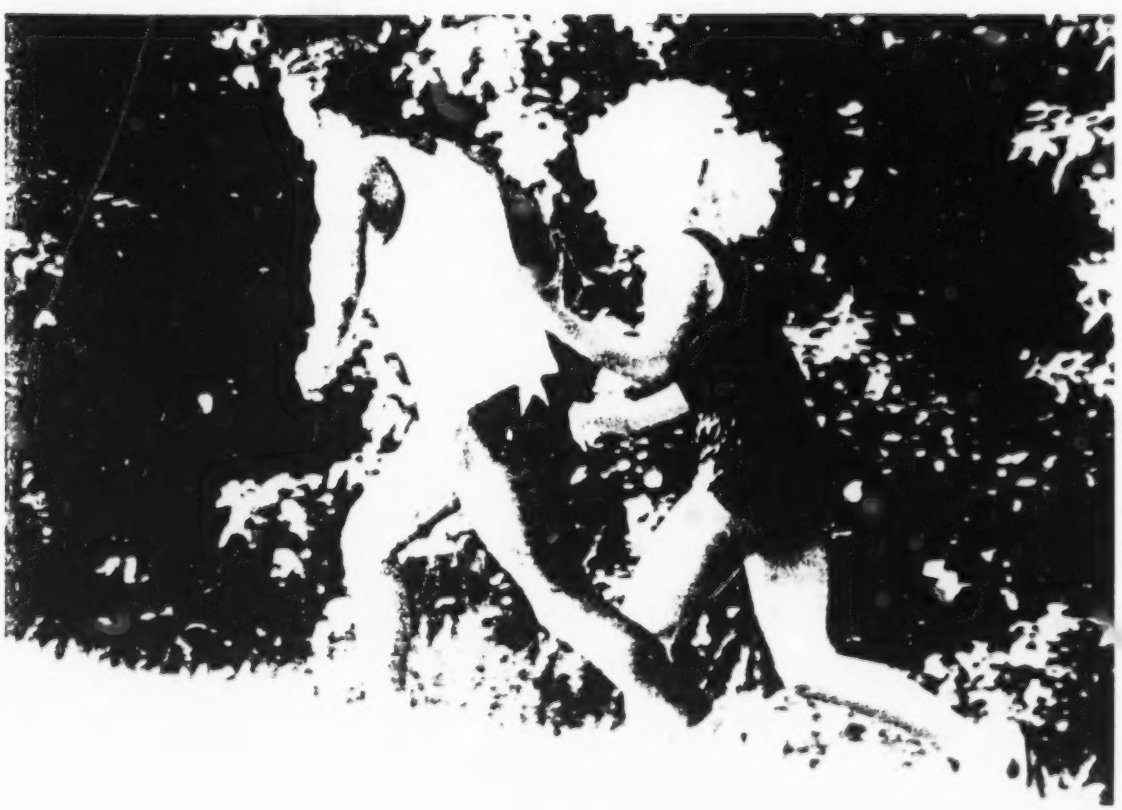
This is a picture of the earth. It was taken from far out in space. It shows that the earth is round. The earth is shaped like a ball.

Have the students read the first two sentences aloud. Write the word *space* and its definition on the chalkboard. Continue the activity by having students read the last two sentences. (Adaptation: Review with the VI student the text before hand, including the word *sphere*.)

Discuss the earth's shape and introduce the word *sphere*. Ask students to find an item in the classroom that has the same shape as a sphere. (Adaptation: Instead of having the student look around the room, give to him or her a variety of spheres to examine.)

Physical Education and Health

The Importance of Physical Education for the Visually Impaired
Preparing for the Blind or Visually Impaired Student
Assessment
Health Education



BEST COPY AVAILABLE

The Importance of Physical Education for the Visually Impaired

For the blind and visually impaired, physical education provides more than the means to develop a healthful life-style; it provides physical fitness and motor skills needed for activities in daily living and orientation and mobility, a more positive self-concept and sense of personal worth, and sports skills.

The purpose of a physical education program for the blind and visually impaired students should be the same as that for sighted students. IDEA, formerly PL 94-142, the Education for All Handicapped Children Act of 1975, mandates that physical education be available to all students with handicapping conditions. The Wisconsin Department of Public Instruction views physical education as an essential part of the curriculum, making valuable contributions to all students in the psychomotor, cognitive, and affective areas. School districts should help all students develop vigorous, healthful life-styles. These include appropriate activities, knowledge, and attitudes for all stages of life. This section should be used in conjunction with the DPI's *A Guide to Curriculum Planning in Physical Education.*

The blind and visually impaired students are likely to choose a sedentary lifestyle due to lack of motivation, lack of opportunities for movement, the inability to imitate the actions of others, and overprotection. Often secondary handicaps can reinforce feelings of inadequacy and increased dependency. They have the same physical need to use their bodies as the sighted students do; but they often spend leisure time listening to the radio or television. As a result, many blind and visually impaired students lack vitality and stamina, have poor posture, and may develop "blindisms" such as rocking, twitching, and shaking of the head. Fear also occurs more often in blind and visually impaired than in sighted students, causing a reluctance to participate in activities where their feet leave the floor. For the blind and visually impaired, physical education provides more than the means to develop a healthful life-style; it provides physical fitness and motor skills needed for activities in daily living and orientation and mobility, a more positive self-concept and sense of personal worth, and sports skills (Buell, 1983; Craft, in Scholl, 1986).

Preparing for the Blind or Visually Impaired Student

To ensure greater independence and involvement for the visually impaired student in a physical education class, an instructor may be successful in using the following methods and adaptations:

- Learn about the student and the impairment. Before the visually impaired student is placed in the physical education class, a conference should be held with the student's prospective teachers, the student, the parents, and the district's director of special education or designee. At that time the student's needs, requirements, and restrictions should be discussed. If a conference does not take place, the needs, requirements, and restrictions also must be determined so that the most appropriate and safe activities can be planned before the student is placed in the physical education class.

The student's ophthalmologist or optometrist should complete an Eye Report for the Child with Vision Problems and indicate restrictions necessary in physical activity. High myopia, for example, requires modified activities because the eye is more susceptible to retinal detachment. Students with high myopia should not be involved in activities in which they may receive a direct forceful blow to the head or eye.

At times restrictions may not be necessary. When possible, discuss specific activities with the eye specialist to determine the amount of required restriction. It is important not to be excessively cautious and protective with the visually impaired students, denying them the benefit of a good physical education program. However, it is important to note that they are especially vulnerable to certain injuries.

- Assess the environment. An instructor should check the safety of the setting and the availability of landmarks and cues that will assist the student in maintaining orientation. Safety precautions are similar to those for all students. Special attention should be given to unexpected or barely seen safety hazards such as guy wires which are support wires for gymnastics equipment.

Landmarks within the environment could be an object, sound, odor, temperature, tactual cue, or visual cue that is recognizable and has a fixed location. Landmarks should be permanent so that the student can consistently use them to find his or her way most effectively and join activities.

Color, contrast, and lighting are also important to visually impaired students. Often the gymnasium varies little in color from walls to floors to equipment. Use of colored tape may help the visually impaired students recognize when and where certain equipment is located. Use of brighter lighting will also assist some in locating equipment better.

- Orientation to the environment should be systematic and consistent. Make an effort to use the same terms as other staff members. Inform the student of any change within the environment and, if necessary, reorient the student. Encourage and assist the student to use all senses to become environmentally oriented. Encourage the student to use his or her other senses so that he or she will be able to appreciate the environment more fully.
- Evaluate the activity. Decide what type of vision and how much vision the student needs to participate successfully in the activity. Offering activities which require no modification or only slight modification does not change the nature of the activity. Modifications of activities could include equipment used by the students such as beeper balls, sounding devices, guide wires, and sighted guides. They might also include those within the environment such as brightly colored balls, field markers, and goals. Many times the visually impaired students themselves can be helpful in suggesting appropriate modifications based on their needs and what will work best for them.
- Introduce the activity. Detailed verbal instruction, physical assistance, and co-active movement are useful when introducing activities. When it is necessary to use visual demonstrations, the visually impaired student should be near the demonstration so he or she can see or explore tactually as needed. The instructor may also ask the blind and visually impaired

It is important not to be excessively cautious and protective with the visually impaired students, denying them the benefit of a good physical education program.

student to be part of the demonstration for the class. The instructor can then illustrate some activities to the student and the class by moving the student in the desired body position and demonstrating the movement sequence.

Precise language is beneficial to the blind and visually impaired, as well as to the sighted student. Specific terms such as "next to the door" or "two feet from the wall" are more meaningful than terms such as "over there," "like this," and so forth. Giving clear, precise directions assists blind and visually impaired students to function more independently. "Walk forward three steps and locate the wall, then trail to your left to locate the door to the locker room" or "grip the bar with both hands, placing the thumbs under the bar for the strongest grip possible" are good examples.

Many physical education activities for the blind and visually impaired require little or no modification.

Teacher Suggestions

The best practices in physical education for the visually impaired are similar to those used with sighted students. The degree of vision loss and age of inception will help determine the most appropriate practice. Some general guidelines follow which may assist in determining the best approach for various physical education activities:

- most skills that sighted people learn incidentally must be taught and reviewed with the blind and visually impaired student.
- detailed verbal instruction, co-active movement, and visual demonstrations are necessary.
- movement for the blind and visually impaired student can be facilitated with sighted guides, guide wires, sounding devices, or verbal cues.
- objects can be brightly colored or should at least contrast with the environment.
- oral directions, large print, and taped or brailled materials are useful.
- real life objects and situations need to be experienced.
- stationary equipment is appropriate. Stationary equipment should be safe and secure for the blind and visually impaired students who may feel uneasy about this equipment (exercise bike mounted to the floor or platform).
- surface contrast (color or texture) needs to be used for various activities and for safety reasons (mats).
- appropriate lighting needs to be used for various activities and for safety reasons.

Physical Education Activities

Many physical education activities for the blind and visually impaired require little or no modification. These activities include weight training, backpacking, cross-country skiing, cycling, self-defense, rhythms, aquatics, stunts, tumbling, apparatus, wrestling, rope climbing, roller skating, hiking, stationary exercises, track and field events, parachute play, and various relays and games.

Most ball sports or skills associated with them need modification for visually impaired and blind student. It is important that visually impaired

and blind students feel that they are involved in the activity. Visually impaired and blind students should never act only as score keepers, goals, or any other nonparticipating position.

Manipulative skills involve sending an object, striking an object or receiving an object. Dodgeball is an example of a manipulative activity because the students throw and receive the ball. Dodgeball can be modified by pairing the student with vision loss with a sighted student. When the blind or visually impaired student attempts to hit, other students should clap their hands or use verbal cues so that the blind or visually impaired student can locate them.

Ball activities seem to cause the most difficulty for the blind and visually impaired. However, modifications are possible. In softball, for example, the blind or visually impaired student can use a batting tee to hit the ball. After hitting the ball, the student can use a sighted guide to run the bases or have someone at each base use verbal cues so that the student can locate the bases. Buell (1983) suggests many other modifications in his book, *Physical Education for Blind Children*.

Ball Sports and Other Manipulative Skills

- Use large colored balls.
- Use balls with bells or beepers.
- Use beach balls to slow the game movement.
- Use rule modification to allow more time to reach the ball (for example, in volleyball allow one bounce).
- Use batting tees.
- Use partners.
- Use verbal cues to indicate movement direction.
- Use auditory targets
- Use verbal cues for the students so that they are prepared to receive the ball (for example, call their name).
- Use slightly deflated balls so that the balls will travel more slowly and stay on the floor.

It is important that visually impaired and blind students feel that they are involved in the activity.

It is impossible to modify all physical education activities for the blind and visually impaired student. When these situations occur, it is important that appropriate alternatives are available. The blind or visually impaired student could participate in an activity such as weight training independently or could be scheduled for more appropriate physical education units rather than specific classes or levels.

Integration into a comprehensive physical education program allows these students to socialize with peers as well as to develop self-confidence and respect. With a few common-sense modifications, the physical education program can be successful for all of the students as well as the teacher in both a mainstreamed and specialized setting.

Assessment

Annual individual educational plans (IEP) must be developed for the special needs of the blind or visually impaired student. Since physical education should be included in the IEP, assessment is a vital element in appropriate physical education modifications and placement. Two assessment instruments have been developed which are appropriate for blind or visually impaired students.

Project UNIQUE Test of Physical Fitness of Sensory and Orthopedically Impaired Youth was developed by Winnick and Short. The test consists of eight major fitness and performance areas: anthropometric measures, dynamic strength/endurance, agility, static balance, flexibility, static muscular strength, explosive muscular strength, and cardiorespiratory function. The creators developed norms for sensory impaired individuals aged ten to 17 years (Craft, in Scholl, 1986).

For blind and visually impaired students the lack of vision may result in poor development of physical, emotional, intellectual, and social skills already acquired by their sighted peers.

Another appropriate test for blind or visually impaired students who have not mastered mature motor skills patterns is the Ohio State University Scale of Intra-Gross Motor Assessment (SIGMA). This criterion-referenced test consists of the following eleven motor skills: walking, running, stair climbing, jumping, hopping, skipping, throwing, catching, kicking, striking, and ladder climbing. An additional curriculum presents teaching strategies to assist students from one developmental level to the next (Craft, in Scholl, 1986).

The current American Alliance physical fitness education and assessment program, Physical Best (1988), is appropriate and useful for the blind or visually impaired student. The test consists of five fitness areas: aerobic endurance, body composition, flexibility, abdominal muscular strength/endurance and upper body muscular strength/endurance. The only modification needed for the blind or visually impaired student is in the aerobic endurance area. The student could perform this subtest with the use of a sighted guide, guide wires, or verbal cues. It is not unrealistic for a 12-year-old blind or visually impaired girl to walk/run one mile in 11 minutes; or a 16-year-old blind or visually impaired boy to walk/run one mile in seven minutes and thirty seconds (which are the standards for sighted students). Additional assessment in the area of physical education can be given with the assistance of a teacher of adaptive physical education, the state supervisor of physical education, or a certified teacher of the visually impaired

Health Education

Health education in the state of Wisconsin is mandatory for all students. Health education assists students in understanding that total health includes all of a person's physical, emotional, intellectual, and social growth, development, and well-being. For blind and visually impaired students the lack of vision may result in poor development of physical, emotional, intellectual, and social skills already acquired by their sighted peers.

Acquiring skills may follow a different pattern for the student with visual problems. The certified teacher of the visually impaired and the teacher of health education should work together to develop appropriate modifications for the blind or visually impaired student. This section should be used in conjunction with the DPI's *A Guide to Curriculum Planning in Health Education*.

Teacher Suggestions

Ten major content areas have been identified as basic components of comprehensive school health education. Each of these areas is appropriate and vital for the blind and visually impaired student. In most situations, modification of printed materials may be necessary.

Eye Conditions: Within one of the content areas it may be beneficial for the blind or visually impaired student to complete a report on his or her eye condition. This information may benefit not only the student but also the sighted classmates.

Human Sexuality: Adolescents often create "bizarre theories concerning the anatomy and functions of sex" through ignorance due to a lack of accurate information, experience, and curiosity (Huebner, 1986). With the knowledge and assistance of the parents, the school should provide sexual information to these students. Various experiences could include playing with anatomically correct dolls representing both sexes, reading, literature and experiencing other mass media material available to any student. The student should be allowed to observe appropriate ways people demonstrate affection toward each other; to learn when, where, and with whom different types of affection are appropriate and inappropriate; and to receive an explanation of colloquial or slang sexual terms (Huebner, 1986).

Learning about the structure and function of sexual organs should take place at an early age with the knowledge and assistance of the parents.

Learning about the structure and function of sexual organs should take place at an early age with the knowledge and assistance of the parents. Models are recommended and should be life-size, made of materials resembling human form and texture, and include all sexual features which are tactually discernable. Models can be used to practice proper placement of both male and female contraceptive devices (Dickman, 1975; Huebner, 1986).

As the student reaches puberty, sexual function and different physical feelings or arousal should be explained. Issues include physical manifestations of arousal, menstruation, ovulation, wet dreams, erection, ejaculation, masturbation, intercourse, climax, contraception, pregnancy, and childbearing. Young girls should be prepared for menstruation, including hygiene, keeping track of their cycles, and use of sanitary pads and tampons (Huebner, 1986).

Health education provides an opportunity for blind and visually impaired students to acquire information. It is essential that the teacher of visually impaired, the teacher of health education, and the parents work together so that the student is well informed and can make intelligent decisions.

References

Buell, C.E. *Physical Education for Blind Children*. 2nd edition. Springfield, IL: Charles C. Thomas, 1983.

Craft, D. "Physical Education." In *Foundations of Education for Blind and Visually Handicapped Children and Youth*. Ed. G.T. Scholl. New York: American Foundation for the Blind, 1986. pp. 396-403.

Dickman, I. *Making Life More Livable: Simple Adaptations for the Homes of Blind and Visually Impaired Older Adults*. New York: American Foundation for the Blind, 1983.

Huebner, K.M. "Social Skills." In *Foundations of Education for Blind and Visually Handicapped Children and Youths*. Ed. G.T. Scholl. New York: American Foundation for the Blind, 1986.

Creative Arts and Recreation

The Creative Arts Experience
The Need for Recreation

The Creative Arts Experience

Creativity is a process of individual experiences that enhance the self, an expression of one's uniqueness. Thus, to be creative is to be oneself. A child who has a visual impairment achieves a better understanding of self through creative arts practiced individually and used as a forum. This, in turn, can lead to a better understanding of others.

The creative experience, a form of self-expression, should not be judged by superimposed standards. An attitude stressing the importance of process rather than product allows a visually impaired student to feel successful about art endeavors. It is a disservice to assume that a student will be gifted in one area, or lack talent in another simply because she or he has a visual impairment.

The creative arts to be considered in more detail are music, art, drama or theatre, dance, and creative writing. In order for a visually impaired student to receive a well-rounded education, he or she should be provided with opportunities to sample activities from each area. Providing new experiences through fine arts enhances opportunities for learning, creativity, and choice. This section should be used in conjunction with the following DPI curriculum guides: *A Guide to Curriculum Planning in Music, A Guide to Curriculum Planning in Art Education, A Guide to Curriculum Planning in Drama and Theatre, A Guide to Curriculum Planning in Dance, A Guide to Curriculum Planning in Creative Writing,* and *A Guide to Curriculum Planning in Arts for EEN Students.*

An attitude stressing the importance of process rather than product allows a visually impaired student to feel successful about art endeavors.

Music

A common misconception is that blind and visually impaired individuals are gifted musically. However, expectations of great muscial abilities may influence the child's interest in developing an affinity for music. Regardless of the child's innate musical ability, music can be presented both in an aesthetic sense as well as in a therapuetic form. Music can influence and improve a variety of skills, such as

- improving motor development in the body.
- improving interpretation, axial movements, and locomotion.
- improving posture and minimizing movements that call attention to the handicap.
- improving body image and spatial orientation.
- providing a sense of freedom, thus overcoming territorial limitations.
- providing relaxation while reducing fatigue and tension, revitalizing mental processes.
- providing a socially acceptable outlet for venting frustration.
- providing the opportunity of equal status participation, or even employment with sighted counterparts through performing groups.
- providing a recreational/leisure activity strictly for enjoyment purposes.

Auditory and tactile senses allow a child to relate to music as a listener and as a performer. Through music, a visually impaired child has the opportunity to participate equally with sighted peers. The following are

suggested adaptations intended to assist teachers in successfully integrating the visually impaired child into a music program in mainstreamed and other settings:

- Acquaint students with the feel and sound of each instrument.
- Substitute audible cues to replace pointing or gesturing when signaling students to play or not play.
- Play instruments or use recordings to help students recognize tone quality and discrimination of musical instruments.
- Present instruments within their given family to generalize specific adaptations (for example, strings should be compared for sound, size, number of strings, position held when played, and so forth).
- Assist in the instruction of body language and role playing skills to facilitate self expression.
- Provide rhythm exercises which promote gains in muscular control and coordination, grace, poise, and self-confidence.
- Provide adjustable music stands for low vision students to allow for appropriate proximity of head to paper.
- Provide sheet music in enlarged print for partially sighted students. Some of these students may find it difficult to coordinate reading the large print and playing an instrument.
- Provide braille music notation for the blind student. The student will need a determined attitude toward exploration and trial and error. Print/braille teacher manuals are available.
- Secure advance copies about professional concerts to provide the student with information pertaining to the historical setting or analysis of the art form.
- Permit students to have additional rehearsals to establish synchronization for processions and recessions.
- Guide students in making realistic decisions about musical ability when considering a musical career.

Some students with low vision may not need adaptations while other low vision and blind students may require several modifications.

Art

Art offers an outlet for creativity, satisfaction in the final product, a sense of accomplishment, and a therapeutic effect. Art provides the means for exploration of the environment and a means of individual expression.

Consultation with the teacher of the visually impaired may be necessary to understand how to compensate for the vision loss. The types of adaptations used will depend on the student's amount of vision as well as visual efficiency. Some students with low vision may not need adaptations while other low vision and blind students may require several modifications. The following suggests ways for educators to help visually impaired children achieve success in the art experience:

- provide appropriate lighting.
- encourage class interaction to enable visually impaired students to benefit from their sighted peers.
- put classroom materials close to the student's work space to facilitate easy access.
- help the student to establish basic art skills before attempting a project.

- use raised-line glue or glue outlines, ball point pens, or marking wheels to establish tactile boundaries or create raised line drawings.
- emphasize color, texture, and shape when appropriate.
- provide physical hand-over-hand assistance in developing cutting, pasting, and gluing skills. Hand-over-hand means using your hands to guide a student's movements.
- provide tracing lines around shapes with a broad lined, scented marker for low vision students.
- relate parts to the whole and provide a model to facilitate spatial integration of the art form.
- help students develop awareness of corners of the paper.
- provide necessary safety features within the classroom.
- use audiotapes to enhance instruction.
- provide precut pieces when appropriate to simplify the art project.
- assist the child in learning to use hands and fingers efficiently (hand-over-hand).
- provide ample time for students to explore objects in depth and to formulate clear concepts.
- use questions to stimulate the student's imagination, thoughts, and ideas.
- use vocabulary rich in descriptive terminology, being conscious of words related to sound, smell, touch, and taste.
- use analogy to present sighted concepts to the child who has a visual impairment.
- emphasize to sighted students that the visually impaired child is "seeing" with his or her hands.
- provide a CCTV for low vision students to enhance visual efficiency in developing and expanding their drawing skills.
- provide tactual, 3-D art work as often as possible.
- allow for individuality of technique.

A nonthreatening setting which builds success rather than failure frees the student to work creatively.

The creative environment should be full of new experiences and opportunities for discovery. A nonthreatening setting which builds success rather than failure frees the student to work creatively. Activities cannot be considered artistic experiences until the student can explore the parts that make the experience unique. Activities in creating art are endless, and the following may be successfully used by the visually impaired:

Activities and Materials Needed

Bean and Grain Collages: various sized beans and grain, contact paper, rubber cement, oak tag paper, and flat dishes for the beans and grains.

Mosiacs: dried peas, beans, and pastas of various shapes and sizes, popcorn, and contact paper.

Soft Soap Sculptures: large bowl, soap flakes, water in a pitcher, measuring cups, large spoon, wax paper, and masking tape.

Play Dough: measuring cups and spoons, pot, plate, container, wooden spoon, flour, salt, cream of tartar, water, oil, and food coloring.

Decorative Ornaments: bowl, spoon, cookie sheet, foil, cookie cutter, flour, salt, and water.

Collage: cardboard for background, glue, scissors, paper, and various fabric scraps.

Object Printing: bottle caps, sponges, spools, sticks, wood scraps, jar lids, erasers, nuts and bolts, clothespins, paper clips, thick tempera paint, sponges or wet paper towels in small containers, paper for printing, and newspaper to cover area.

Rubbing Crayon Underprinting: textured objects, natural objects (leaves, sticks, grass), papers (sand paper, corrugated cardboard), fabrics (corduroy, fur, wool), found objects (buttons, combs, feathers, bottle caps), newsprint paper, and crayons.

Sculpture: modeling clay, clay tools, pencil, orange sticks, popsicle sticks, rolling pin, and plaster of paris.

Finger Painting: pudding, glitter paint, paint/soap mixture, and shaving foam.

Wood Scrap Sculpture (Bas-Relief): wood scraps (branches, bark, lumber), sand paper, glue, and varnish.

Paper-mache: balloons, newspaper, string, boxes, cardboard tubes, wire, tape, newspaper strips,wheat paste varnish, felt buttons, yarn, and cloth.

Puppets: paper bag, paint, yarn, buttons, and cloth scraps.

Finger Puppets: cardboard, tape, colored construction paper, tempera paint with texture added (corn meal, sand, etc.), scissors, and glue.

Fabric Design Stitchery: burlap, loose woven fabric, colored yarn, stichery needles, and fabric scraps for appliques.

Weaving: large pieces of construction paper (contrasting colors) and drinking straws, or cardboard, warp string, scissors, and glue.

God's Eye: two or more twigs, sticks, and yarn in a variety of colors.

Drama

Theatre education and dramatic productions develop skills in reading, listening, speaking, writing, and movement. The benefits are especially evident for blind and visually impaired students. Visually impaired children typically may have difficulty coordinating language, body, and voice for effective communication. Involvement in dramatic activities provides an opportunity to develop these skills for creativity, socialization, spontaneity, self-study, and evaluation. Creative dramatics offers an opportunity to reinforce socially appropriate behavior and extinguish inappropriate mannerisms which may be evident in some blind and visually impaired individuals. Use this section in conjunction with the DPI's *A Guide to Curriculum Planning in Drama and Theatre*.

Creative dramatics offers an opportunity to reinforce socially appropriate behavior and extinguish inappropriate mannerisms which may be evident in some blind and visually impaired individuals.

Blind and visually impaired students can participate in dramatic productions with a few simple modifications.

Blind and visually impaired students can participate in dramatic productions with a few simple modifications. Exposure to dramatic expression at an early age can have applications across the curriculum. Role playing, puppetry, and the improvisational method are widely used in schools and lend themselves well to the inclusion of young and special needs performers. Whenever possible, consult a teacher of vision impaired for appropriate suggestions for specific students. Ideas may include some of the following:

- Allow the blind or visually impaired student the personal freedom to have direct contact with the environment through the remaining senses.
- Provide clear cut, easily discernible, spatial boundries, particularly when working on a stage.
- Orient the student to the setting prior to beginning rehearsals. Identify consistent landmarks for the student and use clear, concise directions when blocking the action.
- Encourage the low vision student to use color clues for orientation purposes. Provide additional contrast where possible.
- Create tactile clues to indicate the edge of the stage. Footlights which have been recessed in the floor of the stage may be hazardous to a blind performer.
- Provide clues to location such as curtain arrangement. These are especially helpful for entrances and exits. Prepare students and have them in place well in advance of entrances.
- Consider using auditory cues, both verbal and nonverbal, as a device to aid in orientation.
- Secure properties so that they are not likely to move or fall if bumped by the blind or visually impaired student.

Certain low vision students may have difficulty adjusting to the lighting changes; some will be able to explain their own lighting requirements and preferences.

Attention should be given to reference points and ease of movement within the set. It may be necessary to deviate from the playwright's model of staging to best accommodate the blind or visually impaired student.

Set properties should meet needs of cast as well as the script. Property setters must be precise to assure that the visually impaired performer is able to locate the necessary equipment at the appropriate time. Presetting props, hiding props in costumes, and carrying on props are all useful techniques.

Some children, especially those with very low vision or those who are congentially blind may require extra coaching to develop appropriate affective expression and body language

Cast productions based on the performer's capabilities. Students may be involved in many aspects of the production without appearing on stage. For students who have problems with mobility, a role which does not call for movement may be appropriate. Blind or visually impaired students who have additional physical impairments may require wheelchair ramps or other accomodations.

Some children, especially those with very low vision or those who are congentially blind may require extra coaching to develop appropriate affective expression and body language. Memory recall is a technique used by many performers to convey emotion and it may be effective also in teaching

expression. Catch the student "in the act" of using natural-looking facial expressions in everyday life. Encourage the student to feel and remember this expression for re-creation later on the stage.

At no time in a child's life is the passion for the art and its unique interrelationship of performers so intense as in the experience of drama. The feeling of accomplishment and belonging is particularly essential in the spectrum of experiences of visually impaired student. Flexibility, persistence, and willingness to accept personal differences helps to enhance and ensure success in the drama experience.

Dance

Creative dance provides an opportunity for all children to discover how their bodies move and to express their feelings. It also allows exploration and discovery of the textures, shapes, space, and sounds within the environment. Creative dance movement comes from within the student with no judgments about correctness or incorrectness.

Creative dance is helpful in the development of body awareness, balance, spatial relationships, muscle control, and independence. Often the student is reluctant to move or may fear movement. Creative dance offers a safe, yet expressive environment.

The progress of the blind or visually impaired student must be assessed realistically with frequent comments.

Teaching methods and adaptations suggested for drama are also useful for creative dance. Additional suggestions are as follows:

- Teaching creative dance should be geared to the potential of the student. It is important that the creative dance activities be unmodified as much as possible so that the student feels comfortable with sighted peers.
- The blind and visually impaired depend primarily on tactile and auditory senses to obtain information about themselves and their environment. Instructions must be detailed and concrete within the realm of the student's experiences.
- Appropriate imagery is an important instructional tool. Defining swaying in terms of a tree does not have much meaning to a student who has never seen a tree.
- Co-active movement is also an important instructional tool. The student can place his or her hands on the instructor to feel movement, or the instructor can guide the student through the desired movement. By mechanically manipulating the student's body, the instructor helps develop kinesthetic awareness which is often lacking in the blind and visually impaired student.
- Leaps and jumps may be difficult. Co-active movement and sighted guide techniques will be helpful for the student to understand and perform the skill.
- The blind or visually impaired student will most likely progress at a slower rate than sighted peers will. It may be necessary for the student to receive additional, individualized assistance or attend private lessons.
- The progress of the blind or visually impaired student must be assessed realistically with frequent comments. Poor executions should never be condemned. Blind and visually impaired students have the same physical, intellectual, and emotional needs as sighted peers.

Creative dance can improve physical and mental health, provide a means of self-expression, and offer a healthy way of socializing. It also can enhance understanding of cultures, increase cognitive skills, reinforce academic skills, and improve aesthetic skills and perceptual awareness.

The Need for Recreation

Society recognizes that recreation contributes to children's growth and development. Involvement in recreational activities during the formative years has a significant and positive impact on basic health and fitness, intellectual growth and development, social and emotional adjustment, creativity, self-expression, and personal satisfaction and fulfillment.

Blind and visually impaired students need the enjoyment and rewards available from healthy recreational outlets and opportunities; they need the associated cognitive, physical, and emotional development that evolve from recreational activities. Local community resources and services are equally important to all children. This section should be used in conjuntion with the DPI's *A Guide to Curriculum Planning in Physical Education.*

Blind and visually impaired students need the enjoyment and rewards available from healthy recreational outlets and opportunities; they need the associated cognitive, physical, and emotional development that evolve from recreational activities.

Community Activities

Attending local activities such as parades, fairs, Fourth of July celebrations, and other festivals is enjoyable for most children who are blind and visually impaired. Often, with smaller local activities, these students will have the opportunity to touch, hear, smell, and taste objects within the environment. Local activities also encourage social interaction and a sense of fellowship.

Public parks, museums, aquariums, and zoos offer opportunities for the blind and visually impaired to interact and learn. A sighted companion can provide information and establish social contacts. Peers can sometimes explain information to these students because they live in the same world, a world which adults may not understand.

Private or group dance or music lessons may benefit the blind and visually impaired. Some instructors may feel unqualified to work with the blind and visually impaired, so special assistance and support may become necessary. Swimming too is an excellent recreational activity which does not require vision and which allows optimal independence. Again, the instructor may feel unqualified to work with the blind and visually impaired. Special assistance and support may be required from the parent and/or teacher of the vision impaired.

Organizational Activities

Some of the best organizations for activities include Cub Scouts, Boy Scouts, Girls Scouts, Brownies, Campfire Girls, and 4-H. Braille handbooks are available from these organizations, and some modifications are made in qualifying for badges and awards. Religious organizations also have much to offer the blind and visually impaired. Sometimes these organizations are

more willing to accept blind and visually impaired children than are other social groups. The YWCA and the YMCA offer programs which are appropriate and beneficial for the blind and visually impaired. These can include activities ranging from physical activities to craft, drama, and dance activities.

The Blind Outdoor Leisure Development (BOLD) program offers instruction in many outdoor sports. The blind and visually impaired often enjoy skiing, mountain climbing, fishing, and other physical activities. The annual Ski for Light event offers opportunities for the blind and visually impaired to cross-country ski.

The United States Association for Blind Athletes (USABA) provides opportunities for the blind or visually impaired to participate in athletic competition locally as well as internationally.

The Wisconsin Lions Camp offers free summer camping experiences for visually impaired children ages six to 18. The Lions provide the campers with opportunities to participate in a variety of activities and meet other visually impaired children from around the state. (See Appendix B).

Commercial Entertainment

Commercial entertainment offers many recreational opportunities for all students. Roller-skating, ice-skating, bowling, and horseback riding are popular among the blind and visually impaired. Attending sports events brings much pleasure to the blind and visually impaired and sighted students alike. The ability to discuss sports and sports-related issues often provides openers for conversations and continued relationships. Attending motion pictures and concerts are other good activities. Much information can be gained through hearing sounds and dialogues in pictures, although at times scenes may require a brief description.

Well-planned recreational activities for the blind and visually impaired provide opportunities for growth and development in all aspects of life.

Individual Activities

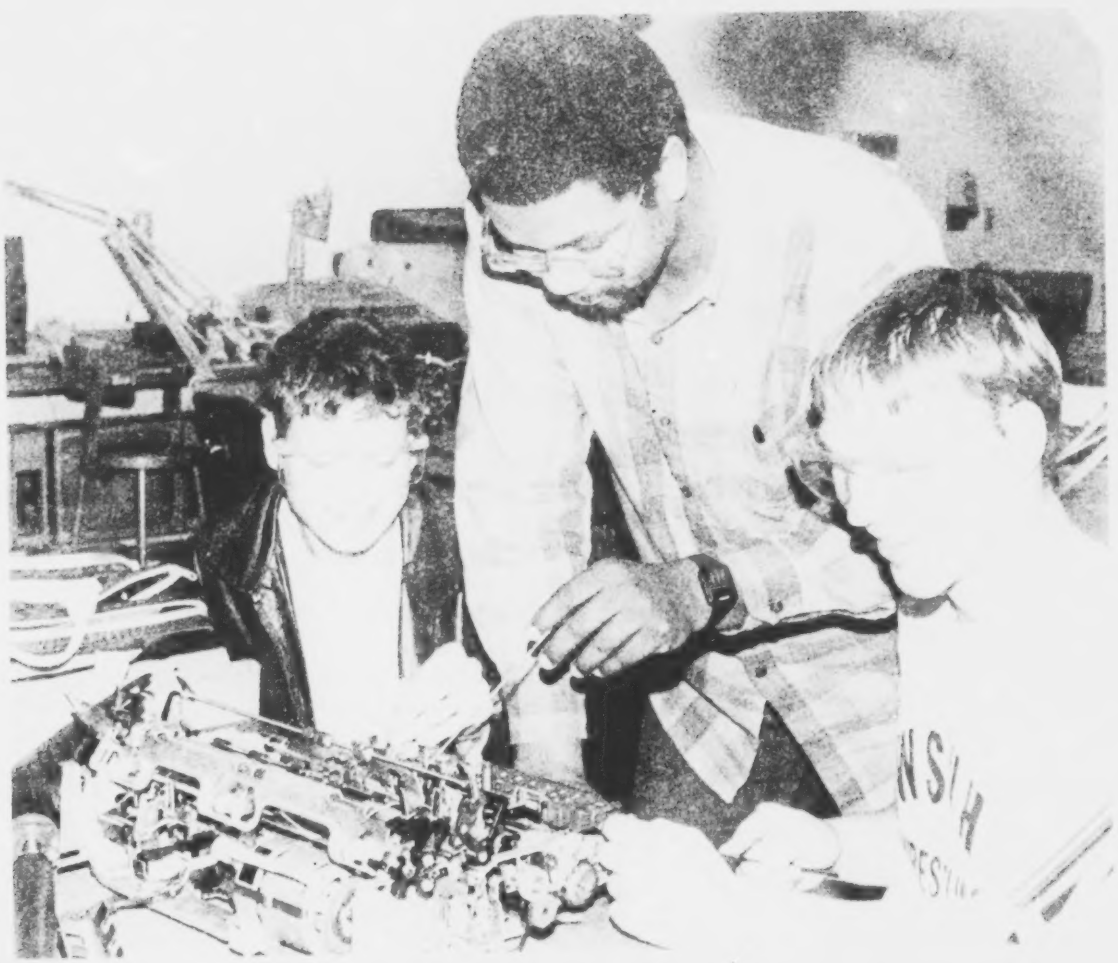
Individual activities can cover a wide spectrum, from listening to the radio to caring for a pet. In general, individual recreational activities should be balanced with group activities. Planting and caring for vegetables and flowers, woodworking, crocheting, knitting, and other hobbies are just a few individual recreational activities. Activities requiring the use of tools and equipment may need adaptations or modifications. Information a student has gathered from academic areas can help with the appropriate adaptations and modifications for these hobbies.

Well-planned recreational activities for the blind and visually impaired provide opportunities for growth and development in all aspects of life. However, all recreational activities are not appropriate for all blind and visually impaired students. Activities should be based on individual capabilities and interests, and should be fitted to the individual. The individual should not be fitted to the recreational program.

The book *Recreation Programming for Visually Impaired Children and Youth*, published by the American Foundation for the Blind, is an excellent source for teachers, parents, and staff at the local department of parks and recreation.

Preparation for Work

Introduction
General Program Planning
Including Visually Impaired Students in Vocational Education Classes
Career Education



BEST COPY AVAILABLE

Introduction

Wisconsin's Education for Employment Standard (M) creates a mechanism for helping all students become economically self-sufficient citizens. (Poole and Burke, 1988) The education for employment concept focuses on career exploration, development of employability skills, and planning and decision-making skills. The Carl Perkins Vocational Education Act of 1984, Public Law 98-524, requires that the full range of vocational education programs be available to all handicapped students.

With current estimates suggesting that an 70 percent of visually impaired high school graduates are either unemployed or underemployed, it is essential that visually impaired students be fully included in all employment awareness and preparation programs offered by Wisconsin schools (*New York Times*, 1991). This section discusses adaptations necessary for including visually impaired students, and it is intended to be used in conjunction with DPI's *The Developmental Guidance Model* and other relevant Wisconsin curriculum guides, such as *Education for Employment* and *Technology Education*.

General Program Planning

According to the education for employment concept, vocational preparation should be a part of a student's educational program in grades K-12. Visually impaired students are no exception. Each year there should be a vocational component to the student's IEP. In general, career education objectives for the visually impaired are the same as they are for nonhandicapped students. (See Appendix E "Resources for Career and Work.") The key in all grades is to provide the individual adaptations necessary to include the visually impaired student. During the high school years, an additional need is to provide realistic direction to maximize a student's potential to secure employment in spite of vision loss. Most adaptations needed in the early grades are described in the topical sections of this guide. The present section will focus on suggested adaptations for courses generally offered in grades 7-12. There should be a vocational component included in the IEP for each visually impaired student. For the high school student, this component needs to be expanded to take the form of an Individualized Education for Employment Plan (IEEP), or an Individualized Transition Plan (ITP). Like an IEP, an IEEP or an ITP should include goals and objectives, indicate people responsible for implementing and monitoring the plan, be reviewed and updated at least annually, and be entirely individualized to meet the needs of the student. IDEA now requires that transition services as described be included in the individualized education programs (IEP) for all students age 16 and older with exceptional educational needs. (Information Update, Bulletin 91.6)

The Carl Perkins Vocational Education Act of 1984, Public Law 98-524, requires that the full range of vocational education programs be available to all handicapped students.

Transition plans should include vocational needs and skills assessment, vocational skills instruction, work experience, and parental involvement.

The plans should list modifications and adaptations needed because of a visual impairment. The plan should meet the interest and aptitudes of the student, and should avoid pigeonholing students into courses that stereotypically are reserved for handicapped students. The plan should include referrals or contacts that need to be made in order to facilitate a smooth transition to post-high school services, such as the following:

- referrals to technical college;
- meetings with university representatives who can facilitate entrance procedures for handicapped students;
- referrals to the Department of Vocational Rehabilitation;
- referrals to various developmental disabilities boards; and
- referrals or contacts to agencies that can assist with funding or post-high school plans for the blind or visually impaired.

To facilitate smooth transition planning, during the last two years of high school the IEP team should actually include persons involved with the agencies intended to be a part of the students' plans.

To facilitate smooth transition planning, during the last two years of high school the IEP team should actually include persons involved with the agencies intended to be a part of the students' plans.

General Considerations

To ensure optimal independence and involvement for the blind or visually impaired student, educators should consider the following:

Orientation to the Classroom or Work Area

Using specific techniques and methods appropriate for the blind and visually impaired student, an orientation and mobility (O&M) specialist should familiarize the student to the classroom and work area. If an O&M specialist is not available, the regional teacher of the visually impaired and/or the statewide vocational education specialist for the visually impaired may demonstrate the proper methods and techniques for classroom and work area orientation. This process of orientation must be systematic and consistent; all staff members should use common terminology. The process is most easily accomplished when the classroom and work area are free of other students and distractions. Ideal times would be before school, during a study hall, or during a teacher preparation time.

A well-ordered environment is top priority. Begin the orientation with a verbal description of the size, shape, arrangement, and content of the classroom and work area. Next, systematically guide the student through the classroom and work area, identifying the location of furniture, equipment, tools, appliances, and materials. Many cues currently present in the classroom will expedite the orientation process, such as:

- high-traction surfaces in and around machinery, and
- brightly painted safety zones.

Some aspects of a classroom that cause problems for the blind and visually impaired include

- cupboard drawers that are left open.
- doors that are left ajar.
- awkward or bulky materials not returned to their proper place.
- obstructions on floors, such as raised outlets or pipes.

To successfully accomplish the orientation process, the student must repeatedly locate and identify objects within the classroom and work area, with and without the assistance of the O&M specialist. The safety of blind or visually impaired students depends on an awareness of any changes that occur within the classroom or work environment. *Remember: Artificial constraints are unnecessary, but consistent patterns and organizations are essential.*

The student must be made aware of all potential danger areas and ways to avoid them.

An Emphasis on Safety

The student must be made aware of all potential danger areas and ways to avoid them. The students must learn to safely approach, assemble, start, and stop all the equipment and machines. Through the use of sound and touch the student comes to understand the machinery's range of movement. Further, the student learns a safe path from the primary points of contact while operating the machines or appliances. There will always be machines that, due to safety factors, will be difficult or hazardous for a blind or visually impaired student to operate independently. In these cases, the options of working with a sighted partner or operating machines co-actively are viable adaptations.

Appropriate clothing, jewelry, and hair length should be considered for the blind or visually impaired student who operates machines, appliances, or equipment. Long sleeves, rings, and watches may cause unnecessary problems for the student. Also, the student must be taught to keep the work area free of litter, cuttings, shavings, and spills to prevent slipping or falling.

Determination of an Appropriate Location

Lighting, glare, contrast, and noise are important factors to consider. The student may need a magnifier or other aid. The teacher of the visually impaired or the statewide vocational education specialist for the visually impaired will be good resource people to call on when evaluating the student's work area.

Methods of Instruction

In general, many of the same methods used in teaching the sighted student to use and operate machines, equipment, tools, and appliances can be used in teaching the blind or visually impaired student. These students need demonstrations through tactile and auditory means rather than the visual. When possible, the student can handle the equipment or use co-active movement to "see" how it works. Generally it is helpful to meet with students ahead of time in order to assist them individually. When an object's entire area is so large that a blind or visually impaired student cannot comprehend it by touch alone, instructors find that describing an object of similar character or design, with which the student is familiar, is extremely helpful. Often the blind or visually impaired students themselves help determine which adaptive methods do and do not work.

Braille and Other Tactual Labels

Although they can be used for various dials, materials, and gauges, it is important not to label so excessively in braille that confusion results.

Boardwork, Note-taking, and Testing

These skills often are difficult for the blind and visually impaired student. Some low vision students find a small hand-held monocular telescope useful for board work. They often require alternate methods such as a sighted partner to share or photocopy notes with the blind or visually impaired student. Both tests that teachers give orally or that visually impaired students read independently may require additional time. Also, it helps most visually impaired students to mark directly on the test rather than transfer answers to an answer sheet.

Including Visually Impaired Students in Vocational Education Classes

Visually impaired students must not be excluded from taking vocational courses. With a few modifications or adaptations, most vocational classroom activities can include visually impaired students. Visually impaired students must be allowed to benefit from the curriculum content, the practical applications, and the exposure to machines, tools, and materials. Otherwise they will not receive an equitable opportunity to learn vocational skills. All adaptations require individualization, and the certified teacher of the visually impaired, the district's LVEC, the state-wide vocational educational specialist for the visually impaired, and the students themselves can all be helpful in the individualization process. Remember that some adaptations are made because the student has no useful vision; other adaptations are made to help the student best use whatever residual vision he or she may still have. The following are common adaptations that can help to successfully include visually impaired students in hands-on vocational preparation classes:

With a few modifications or adaptations, most vocational classroom activities can include visually impaired students.

- For most vocational education courses, large print, braille, or taped reading material will be required.
- Closed circuit television (CCTV) systems that enlarge and magnify text may be necessary.
- As indicated in this section's "General Considerations" section, safety must be stressed, particularly when using power equipment. (It is interesting to note that teachers and employers often comment that the visually impaired have fewer machine and tool accidents than their sighted counterparts—perhaps because they have learned to to take safety seriously.)
- Power and hand tools need to be introduced through tactile and auditory senses.
- It may be necessary to use the tool co-actively with the student until he or she displays safe independent use.
- It sometimes helps to have students choke up on the handle of certain tools, or to shorten the handle grip in order to gain more tactile control.

Precise measurement is generally not possible for the visually impaired. However, during necessary measuring activities, the following adaptations are often helpful:

- Standard rulers can be modified by adding either raised dots, or slotting for fingernails.
- Specially designed measuring tools are available from the American Foundation of the Blind, the Howe Press, or the Wisconsin Council for the Blind which include
  - — a 12-inch cast aluminum rule,
  - — a combination square, or
  - — an aluminum marking gauge.

. . . the visually impaired student must have the opportunity to participate, at least partially, in any vocational education course.

Measurement is a skill that might be more effectively done as a co-active exercise.

Some courses such as drafting and accounting may be extremely difficult for a blind or visually impaired student, and substantial modification and individualized attention may be required. Raised line drawing kits can be used for outline drawings, but they are suitable for only very basic drafting concepts. Business shorthand offers little practical value to blind or visually impaired students, because such methods emphasize both speed and accuracy in preparing visual material.

But always, if the blind or visually impaired student shows interest and if the IEP team determines that the student will derive some value from parts of the course content, or from certain experiences offered via class activity, then the visually impaired student must have the opportunity to participate, at least partially, in any vocational education course.

Career Education

Career education for the visually impaired high school student must include another two components in addition to vocational program planning: vocational assessment and guidance and counseling. It is important to note again that no two visually impaired students will have the same exact needs, nor require the same adaptations and modifications. Career education for the visually impaired must be entirely individualized. The following sections outline procedures, adaptations, or modifications commonly recommend for visually impaired students.

. . . no two visually impaired students will have the same exact needs, nor require the same adaptations and modifications.

Assessment

An essential component of a vocational plan is assessment. Visually impaired students should be assessed for vocational interests, vocational information, and preparatory skills. A number of commonly-used vocational assessment instruments are adaptable, or have already been adapted for use by blind or visually impaired students. The following chart shows which assessment instruments are available through the Educational Services Center.

Figure 1

Adaptable Assessment Instruments

Test	Medium	Indications
Career Occupational Preference System (Cops)	braille, large print	interest inventory, vocational abilities, career exploration, values clarification
Microcomputer Evaluation and Screening Assessment	computer, large print, braille; nonportable	vocational assessment, career exploration, manipulation/dexterity
Conceptual Understanding though Blind Evaluation	hands-on; nonportable	vocational assessment
Employment Competency Package	braille, large print, computer with speech	job seeking skills
Career Decision Making	computer-based with braille and large print worksheets	career exploration
Career Skills	computer-based with braille and large print worksheets	career exploration
Career Scan	computer-based with braille and large print worksheets	career exploration
Self-Directed Search	computer-based with braille and large print worksheets	career exploration
Strong-Campbell	braille, print, tape	interest inventory
Kuder Vocational Preference System	braille, large print	interest inventory
PR6 (Bauman) Interest Inventory	braille, large print	interest inventory
Holland's Self-Directed Search	computer (no speech)	interest inventory
Social and Pre-Vocational Information Battery	braille, large print, tape	vocational assessment
SCREEN Test for the Visually Impaired	tape	pre-vocational and assessment
Personnel Test for Industry	tape	pre-vocational assessment
WCIS	computer	interest inventory

The following vocational assessment tools have been normed for the visually impaired and these tests are also available through the Educational Services Center.

- Tool Technology
- Talent Assessment Program
- Minnesota Rate of Manipulation
- Pennsylvania Bi-Manual Work Sample
- Purdue Pegboard
- Bennett Hand Tool Test

Vocational guidance counseling for the visually impaired must extend beyond the level of guidance commonly given to most high school students.

Guidance and Counseling

Vocational guidance counseling for the visually impaired must extend beyond the level of guidance commonly given to most high school students. It must focus on what the visually impaired student must do to access and succeed in post-high school education or employment opportunities. Again, every student's needs will be different. Every visually impaired student will need different adaptations and a different plan of action. The following are some issues that commonly need to be addressed when working with the visually impaired.

College-bound students

Many colleges and universities have support programs or personnel specifically designated to help handicapped students succeed. Students should be directed to seek out this information and contact these support services. Some of the support services within Wisconsin's university and technical college system include the following:

University of Wisconsin-Eau Claire, (715) 836-5415. Services for mobility impaired students are available, as are services for deaf, visually impaired, and learning disabled students.

University of Wisconsin-Green Bay, (414) 465-2111. Services for deaf, visually impaired, and mobility impaired students.

Many colleges and universities have support programs or personnel specifically designated to help handicapped students succeed.

University of Wisconsin-LaCrosse, (608) 785-8067. Special services helps students with individual needs related to mobility, visually, or hearing impaired, or a diagnosed learning disability. Notetaking, taped texts, tutoring, and special equipment are among the services offered.

University of Wisconsin-Madison, (608) 262-3961. Services are available for mobility impaired students, and there is also a career assistance center for disadvantaged and handicapped individuals. Services for hearing impaired, deaf, and visually impaired are offered, as are services beyond remedial tutoring for learning disabled students.

University of Wisconsin-Milwaukee, (414) 229-3800. There are programs and services for hearing impaired, deaf, visually impaired, and mobility impaired students.

University of Wisconsin-Oshkosh, (414) 424-0202. Programs for dyslexic students and services for deaf, visually impaired, and mobility impaired students. There is also a career assistance center for disadvantaged and handicapped students.

University of Wisconsin-Platteville, (608) 342-1125. Services for visually impaired and mobility impaired students. Limited services exist for some learning disabled students.

University of Wisconsin-River Falls, (715) 346-2441. Services for deaf, visually impaired, and mobility impaired students are offered, as are services, beyond remedial tutoring, for learning disabled students.

University of Wisconsin-Stout Menomonie, (715) 232-1232. Offers vocational rehabilitation assessment for visually impaired students.

University of Wisconsin-Whitewater, (414) 472-1440. Programs and services for hearing impaired, visually impaired, and mobility impaired students. There is also a career assistance center for disadvantaged and handicapped students and services for learning disabled students.

Blackhawk Technical College, Janesville, (608) 756-4121. Program for the visually impaired.

College-bound students should be aware of the many resources throughout the state.

Gateway Technical College, Racine, (414) 6531-7304. Programs for hearing impaired, visually impaired, mobility impaired students and learning disabled students.

Gateway Technical College, Elkhorn, (414) 741-6100. Programs for hearing impaired, visually impaired, mobility impaired students, and learning disabled students.

Milwaukee Area Technical College, Milwaukee, (414) 278-6600. Programs for hearing impaired, visually impaired, mobility impaired students, and learning disabled students.

Northcentral Technical College, Wausau, (715) 675-3331. Programs and services for hearing impaired, visually impaired, mobility impaired students.

Milwaukee Area Technical College, West Allis, (414) 476-3040. Programs for hearing impaired and visually impaired.

College-bound students should be aware of the many resources throughout the state. The Wisconsin Department of Vocational Rehabilitation can often provide financial support and assist with securing adapted aids and appliances. The Technology Loan Center in Milwaukee can loan certain adapted equipment to university or technical college students. Several universities and colleges have adapted equipment readily available for the visually

impaired. The Wisconsin Council for the Blind publishes an annual list of scholarships available to visually impaired students.

Guidance counselors will want to prepare college-bound visually impaired students for the possibility of needing aids to and adaptions for studying in college. Talking computers, CCTV enlarging systems, and magnifiers are just some of the materials students need to consider for their college career. Students and counselors should investigate together the resources and services listed in this guide to find answers to these questions.

Counselors should be aware that both the SAT and the ACT tests are available in large print, braille, and cassette tape. Special request forms needed to order the adapted tests can be obtained by contacting the following:

ACT
Special Testing 58
ACT Test Administration
P.O. Box 168
Iowa City, IA 52243
(319) 337-1332
(319) 337-1448

SAT
Handicapped Services
College Board A.T. P.
P.O. Box 6200
Princeton, NJ 08051-6200
(609) 771-7137

Significant notice must be given if students require taped, enlarged, or brailled textbooks. Campus bookstores often require students to order their own materials, so students need to contact support staff or instructors well in advance of the start of the semester to secure the titles of the books for their intended courses. This is one reason many colleges and universities will allow early enrollment for visually impaired students. College-bound students may need to become aware of textbook recording and transcribing services. The most commonly used ones are

Guidance counselors will want to prepare college-bound visually impaired students for the possibility of needing aids to and adaptions for studying in college.

- American Printing House for the Blind
- Educational Services Center
- Milwaukee Public Library, Library for the Blind and Physically Handicapped
- Recordings for the Blind, Inc.
- Volunteer Braillists, Inc.
- Volunteer Textbook Recording and Transcribing Service

College-bound students may need information about hiring readers for instant access to material not available in a preferred reading mode, or for library research. This information can often be secured through the DVR counselor, or through college support services.

College-bound students will need to be well prepared to use the library in order to do necessary research for various papers and projects. Library card catalog systems, whether on cards or computers, are often very difficult for the blind and visually impaired to access. Using enlarged print, tape, or braille notes and materials to prepare research papers requires much skill, practice, and extraordinary organizational skills.

Visually impaired students entering college will need to consider ways of taking notes. If they want to tape their lectures, they must approach the instructor to gain permission and any special instructions. They also might want to use any or all of the following: a braillewriter, slate and stylus, or a

newer compact computer braille keyboard device. Or perhaps their handwriting skills are good enough to take rapid notes in a readable fashion. All of these possibilities should be weighed with the input and special instructions of the college instructors.

Visually impaired college students will need to consider orientation and mobility. Their independent travel skills must be sufficient for the environment of the college lifestyle. This sufficiency generally can be achieved by advance orientation to dorms, classrooms, and the campus itself. Independent living skills need to be developed as well, in order to be self-sufficient. A certified orientation and mobility instructor might be a useful, sometimes necessary support person to help orient a student to a college campus.

. . . independent travel skills must be sufficient for the environment of the college lifestyle.

Counselors should be aware of the two technical colleges in Wisconsin that have programs specifically for visually impaired students. These are Northcentral Technical Institute program for the Visually Impaired in Wausau and the Milwaukee Area Technical College.

Job-Bound Students

Guidance counselors may be asked what jobs visually impaired workers tend to perform successfully. Appendix E includes a list of resources that school counselors can use to answer this question. Remember, however, that these sources are only indicators; they do not represent the only jobs that can be done by blind and visually impaired students.

Occasionally the most appropriate job opportunity for a visually impaired graduate will be a location designed specifically for visually impaired workers. There are two industrial workshops for the blind in Wisconsin: Industries for the Blind and Wiscraft, both located in Milwaukee.

In addition, through the DVR-managed Business Enterprise Program qualified visually impaired adults may be assessed, trained, and licensed to operate or work in a variety of small cafeterias, vending businesses, or other food service enterprises located in state or federal buildings or facilities. These business opportunities are reserved exclusively for the visually impaired.

Guidance counselors should know too, that the Wisconsin Council of the Blind will often provide business loans to visually impaired adults who want to start their own small businesses. The applicant must have the education, training, or skills required to operate the business, but there are few restrictions as to the type of approvable small business loans.

Occasionally some jobs or job sites will require adaptations or modifications to enhance the employability of the blind or visually impaired person. To facilitate the efforts in determining if adaptations or modifications are necessary, the following resources can be used:

- National Technology Information System, sponsored by the American Foundation for the Blind. This program provides information about commercially available products for blind and visually impaired persons. They design and adapt devices and operate national toll-free hotline for dispensing of information.
- Program for the Visually Impaired—The Office of Sensory Impairment, Division of Vocational Rehabilitation in Wisconsin. This program offers a

technology center, low vision evaluation, and orientation and mobility services.

Job seeking skills

A number of questions and issues are likely to rise when discussing job seeking skills with visually impaired students. The following are some of the issues commonly requiring additional consideration because of factors related to vision loss. As always, each student's needs and concerns will differ as will the appropriate resolution of each issue.

For visually impaired people, organization is a key factor relating to successfully learning and applying job seeking skills. Organizing personal data, references, resume information, resource material, and job interview information can be a real challenge for a student who must rely on braille or large type, or cassette tapes. Generally, visually impaired students find it most convenient to keep job seeking information on a personal computer data disk, when possible. Clearly labeled pocket folders, or other self-organizing format can also help. It is very easy for a visually impaired person to lose, mislocate, or be unable to quickly find essential information. Guidance counselors can play a role in helping students develop a usable data organization system specifically for job seeking purposes.

Filling out job applications can be a challenge for visually impaired job seekers. Blind and visually impaired students generally do not have the opportunity to actually see a typical job application. Vocational counselors can help visually impaired students become familiar with the contents of typical applications, and can prompt them to gather resources needed to be able to answer commonly asked questions.

Actually filling out a job application presents several obstacles for many visually impaired job seekers. When possible, it is advised that the applicant try to arrange to fill out the application in the privacy of his or her own home. This works well because magnifiers can be used, or sighted assistance, or whatever adaptations the student requires. It can also make it easier to have a sighted confidante proofread the application before final submission. Finally, additional time can be taken to ensure neatness and accuracy.

For visually impaired people, organization is a key factor relating to successfully learning and applying job seeking skills.

Several issues may arise if an application must be filled out on the spot, and it is wise for a student to be prepared to face any of the following issues. A blind or severely visually impaired applicant may need to decide whether to ask someone at the employer's for help in filling out the application that he or she cannot see, or whether to take along a friend. In either case the applicant should have all potentially needed information organized and easily accessible. Students will want to consider in advance how comfortable they are sharing personal information with strangers. They may need to consider how comfortable they are using a magnifier or thick reading glasses in the presence of potential employers. Some students may need actual practice in public situations to become more comfortable.

Job interviews can present a challenge for many visually impaired applicants. There are concerns about organization, placement, and handling of any materials, magnifiers, white canes, or other adaptive aids which

may be necessary. There are many concerns about appropriate demeanor and physical appearance. Counselors can help by providing mock interview experiences that are as complete and realistic as possible.

Frequently there are orientation and mobility concerns related to an interview. These include sighted guide, white cane, or dog guide. Again, realistic mock interviews in somewhat unfamiliar environments can help prepare the student to deal with some of these issues. A trial run to the place of the interview can be extremely helpful. Then, on interview day, some of the anxiety related to traveling to the interview site can be relieved, and the applicant can reserve energy for the actual interview.

Counselors can help by providing mock interview experiences that are as complete and realistic as possible.

References

Poole, Vicki A. and Peter J. Burke. *Education for Employment: A Resource and Planning Guide.* Madison: Wisconsin Department of Instruction, 1988.

Spungin, Susan. *The New York Times.* May 12, 1991.

Special Curriculum Needs

Orientation and Mobility
Daily Living Skills
Low Vision

BEST COPY AVAILABLE

Orientation and Mobility

The Need

Significant vision loss always affects independent travel skills.

Significant vision loss always affects independent travel skills. The need for specialized help for totally or nearly blind children is obvious. The need for specialized help for children with varying degrees of low vision may be less obvious and is sometimes neglected; it is, however equally crucial. Whether the child has total or partial vision loss, freedom and fluency of movement is affected, and the learning experiences related to full independent movement are at risk of being compromised.

Beginning at a very early age, a visually impaired child's educational program should include comprehensive, systematic attention to the child's current and future travel needs. Attention must be focused on the development of spatial concepts, body movement, and proprioceptive skills, attitudes toward independence, and travel skills. The ultimate goal of the training program is to develop the skills necessary to travel safely and independently and to remain oriented in a wide variety of both familiar and unfamiliar indoor and outdoor environments. Such a program requires the cooperation of parents, classroom teachers, and orientation and mobility specialists.

Students vary in their potential for independent travel. Some visually impaired students will learn to become completely independent travelers; others have only the power to minimize their dependency in certain areas. Mobility instructors will provide a program designed to maximize student potential.

Orientation and mobility specialists are teachers who are trained to attend to the travel-related needs of visually impaired children of all ages. These specialists can assess a child's needs, they can provide instruction, and they can offer suggestions and consultation to parents and professionals. They focus on two factors critical to independent travel:

Mobility: safe, efficient movement through the environment

Orientation: use of the senses to establish one's location or to know one's position relative to other significant objects in the environment.

Students vary in their potential for independent travel.

It is easy to suggest that all children with significant vision loss should receive the services of an orientation and mobility (O&M) specialist. However, because vision loss is a low incidence handicap, only a few Wisconsin school districts or CESAs have O&M specialists. The lack of availability makes it difficult to know when a referral for services is warranted. In general, if the child's current travel needs are not adequately met, or if the child is not being sufficiently prepared to meet future travel needs, then a referral for assessment, O&M instruction, or consultation is probably warranted. Districts which do not have O&M specialists have several options for securing needed services. To find out if a district has an O&M specialist, or to find out about currently available service options, contact the teacher of the visually impaired, the director of special education (or

designee), or the state supervisor of programs for visually impaired. It is important that a certified mobility instructor be contacted for both evaluation and instruction because mobility instruction is a highly specialized field and involves many safety factors.

. . . orientation and mobility (O&M) instruction for a totally blind student should be provided by a certified O&M specialist.

There are many circumstances for which a referral for mobility services is warranted. The following are some of the most common:

- assistance is needed in developing reaching, creeping, crawling, or walking skills in an infant, toddler, or preschool child.
- a primary student needs help developing spatial awareness, spatial concepts, body concepts, body space vocabulary, or independent movement in familiar environments.
- a student needs help learning to travel to classes independently.
- a student gets around school independently, but does so unsafely, bumps into walls, trips on steps, moves awkwardly or ungracefully, uses inefficient or circuitous routes, or is frequently disoriented.
- a student seems to be extremely glare sensitive on sunny days.
- a student travels adequately in daylight, but has "night blindness" or problems in low-lit areas.
- a student needs to learn to walk a few blocks to the grocery store, or to a friend's house, or to another destination of interest.
- a student needs to learn to cross busy streets at stop signs or traffic lights.
- a student needs to learn to use public transportation.
- a student needs to learn to enter unfamiliar public buildings to make purchases or to conduct business.
- a student needs to learn to use appropriate travel tools (white cane, distance magnifiers, special sun glasses, or other tools to meet individual needs).

Orientation and Mobility for the Blind Student

In general, orientation and mobility (O&M) instruction for a totally blind student should be provided by a certified O&M specialist. Specialized knowledge and training is required to teach the following: orientation and information-gathering skills; the use of certain protective travel techniques; the use of a white cane, or dog guide, or special electronic travel aids; and outdoor travel skills, especially traffic safety skills.

All instructors and caregivers can play a key role by emphasizing the development of spatial concepts.

The teacher of the vision impaired, regular classroom teachers, and parents can play important roles in the development of the skills and attitudes required for independent travel, particularly for young blind children.

All instructors and caregivers can play a key role by emphasizing the development of spatial concepts. Orientation skills begin with a solid foundation in body space concepts (front/back, right/left), positional concepts (above, between, next to), and extended-space vocabulary (straight, parallel, perpendicular). To remain oriented, a blind child must constantly monitor the relative position of objects and places in both the immediate and extended environment. Teachers and parents can help the child experience a variety of environments and learn the appropriate vocabulary to describe the relative positions of objects.

People working with a young blind child can help by providing environments that are safe and that encourage movement and spatial exploration. They can help by allowing the child to have normal movement within classrooms, hallways, playgrounds, and around the home. They can help the child experience doors, steps, curbs, and terrace and ground texture changes.

Most early travel for blind children will either be within safe, controlled environments, or will be experienced with the aid of a responsible sighted guide (consult an O&M teacher or teacher of the vision impaired for information about safe, proper sighted-guide techniques). Parents and teachers can help by encouraging blind students to practice the O&M skills. They can encourage independent travel and promote an attitude which results in a desire for independence. They can help identify needs for mobility specialists.

Persons working with a young blind child can help by providing environments that are safe and that encourage movement and spatial exploration.

Orientation and Mobility for the Low Vision Student

Orientation and mobility instruction is as important for a child with low vision as it is for a totally blind child. The goal is the same for all visually impaired children: to learn to travel as safely, efficiently, and independently as they can.

Since the need for specialized instruction is sometimes less obvious with a low vision student, parents and teachers can play a key role in identifying needs and making appropriate referrals for instruction. As with a totally blind child, it is essential that a low vision child develops basic body-space and extended-space concepts to remain oriented. Children with low vision often need training and sequential instructional experiences to learn the best ways to use their residual vision for travel. Many low vision children have fluctuating vision that affects travel. Some students are extremely glare-sensitive and need special glare-reducing sunglasses for outdoor travel. Other students need to learn compensatory travel skills for low-lit areas. Some students need work with visual scanning techniques, part-whole perception skills, or adaptive behaviors for coping with problems adjusting to sudden lighting changes. Many low vision students benefit from instruction with distance monocular magnifiers for activities such as reading street signs, reading fast-food menus, or using classroom chalkboards from a distance. Some low vision children need instruction in the use of a white cane for safety-identification or for use in selective travel situations.

Orientation and mobility instruction is as important for a child with low vision as it is for a totally blind child.

All low vision children need a variety of travel experiences in buildings, residential neighborhoods, rural areas, and business districts in order to develop safety skills, confidence, and an attitude of independence. Experiences with public transportation are also important as the child grows up and travel needs expand; securing a driver's license is unlikely.

Parents and teachers can make a major contribution to the development of independent travel skills for a student with low vision when they recognize these needs, provide appropriate referrals for instruction, and help provide appropriate travel experiences.

Orientation and Mobility for the Multi-Handicapped Student

Many visually impaired children have additional physical or mental handicapping conditions which severly limit their potential for completely independent travel. However, the goal remains the same—to provide the experiences and instruction necessary to teach them to be as safe and independent as possible.

Multi-handicapped students are taught individual compensatory skills designed to minimize dependence on others while traveling. They need to experience a variety of environments (home, worksite, recreation, public places), and they should be given opportunities to practice travel skills and compensatory skills within these environments. Mobility skills should be integrated into every area of the student's educational program, with particular emphasis on functional activities.

Modifications should be made to meet individual needs. The use of wheelchairs, walkers, braces, or other orthopedic devices are taken into consideration.

Multi-handicapped students are taught individual compensatory skills designed to minimize dependence on others while traveling.

Commonly Asked Questions

While much of the O&M instruction must be provided by a specialist, there is also much that parents and classroom teachers can do. The following chart is designed to answer commonly asked questions about the mobility needs of blind and visually impaired students.

Figure 2

Overview of Concerns, Suggestions, and Expectations

Infants

Issues	Suggestions
1. How do I encourage movement in an infant?	1. Provide a reward for movement: touching, cuddling, sounds or objects. Encourage desired movement by positioning and physically assisting the infant through desired moves.
2. How do I help give meaning to an infant's environment?	2. Remove background noise and sounds that will distract the baby from relevant sounds. Provide various sound sources or visual markers to identify and differentiate between areas, such as, chimes in the kitchen, poster on a bedroom door. Help them make sense out of the information they are receiving. An O&M specialist or vision teacher can provide specific ideas for your environment.
3. The baby moves only a tiny bit, then stops. What's happening?	3. A VI baby may move small amounts and then lie still to re-examine environmental information before moving again. This is orientation. Patience should be practiced and movement rewarded no matter how slight.

Age Appropriate Expectations

- All age appropriate developmental movement and physical positionings.
- Awareness of familiar voices, sounds, and people.
- Recognition of familiar environments.

Toddlers

Issues	Suggestions
1. This child is always lagging behind. She/he seems so much slower than his/her sighted peers. Is this normal?	1. It is normal for a VI child to move slowly. It is important to provide a safe environment with lots of encouragement toward movement. Rewards can be used. After a bump or bruise, extra support and encouragement may be necessary. Provide experiences with other children of the same age so the child can learn from appropriate role-models. Physical manipulation and positioning may be necessary for a child to learn new movements (hop, stoop). Activities should be done with minimal and decreasing levels of assistance. A child that uncontrollably repeats a particular movement should be encouraged to vary purposeful movements.
2. What activities can I provide to help the toddler become more aware of the environment?	2. Within the home, specific visual cues and sound sources can help a child identify a specific location. Various floor textures can provide orientation information. Encourage curiosity about the environment. While traveling in a car, talk about visual and auditory clues and landmarks. Reinforce time/distance relationships: It takes five minutes to get to the store, and 30 minutes to get to Grandma's because it's farther. Expose the child to as many different environments as possible and provide information to make the environment meaningful. Make all experiences physically and psychologically safe! An O&M or vision specialist can provide additional ideas.

Age Appropriate Expectations

- Travel independently within home.
- Travel stairs independently.
- Understand positional relationships, body parts, body awareness.
- Identify objects in environment.
- Develop understanding of safety limitations.
- Increase sensory awareness–tactual, olfactory, kinesthetic.
- Recognize environmental landmarks.
- Generalize some known skills from familiar to unfamiliar environments.

Elementary

Issues	Suggestions
1. Should I lead the child by the hand everywhere we go?	1. The student should be properly familiarized to classrooms and be expected to function as independently as possible within those areas. Some students will learn to use a cane. A vision teacher or O&M specialist can show proper sighted guide technique to teachers, parents, and peers. Sighted guide is most beneficial when traveling in unfamiliar environments, through moving lines of people (lunch lines, lines at counters, bus lines) or when walking in a group.
2. What about getting to other areas within the school such as gym, playground, lunchroom, office, bathrooms?	2. Routes and level of independence should be determined by an O&M specialist; practice of routes reinforced by classroom teacher. Some students will achieve complete independence throughout school; others will not. Until routes are learned, a sighted guide would be appropriate. Some students will learn to use a cane.
3. What should I do on field trips?	3. A totally blind student should be guided in all unfamiliar areas to ensure safety. A low-vision or multi-handicapped student, depending on skills may use a peer partner, need adult supervision, or walk with a group. A vision loss should not keep them from participating in classroom/community activities along with their sighted peers.
4. How can I make my classroom safe for the student?	4. Familiarize the student to the room. Point out locations of stairs, drop-offs, doors (don't leave door ajar), objects protruding from walls and obstacles in the room. In cluttered areas such as hallways or coat rooms, verbal or physical assistance may be appropriate. Tell the student if you rearrange items in the room.
5. My student can't follow verbal directions.	5. The student may have deficits in the areas of spatial vocabulary, (on, in, behind, etc.), part/whole relationships, or sound localization (walking toward a sound-source). Reword directions using alternate spatial terms, help

	identify objects in the environment using alternate spatial terms, help identify objects in the environment using what she or he already knows, give intermittent or continual sound cues. Provide instruction to remediate spatial concepts or vocabulary.
6. Should I expect my student to walk up and down steps or through doors independently?	6. Yes. Most students will learn to negotiate stairs and doors independently. Individualized instruction might be necessary.
7. What mobility aids does my student need, and where do I get them?	7. An O&M specialist determines what type of equipment is necessary, at what age it should be issued, its proper usage, and where it can be obtained.

Age Appropriate Expectations

- **Concepts**. Awareness of body parts and movements, right and left, positional relationships (on, in, beside, etc.)
- **Orientation Concepts**. Shapes, measurement, horizontal, vertical, diagonal/parallel, perpendicular, compass directions, sun positions.
- **Sensory Awareness**. Auditory, tactual, environmental, olfactory, kinesthetic, visual.
- **Indoor Skills**. Self-protective techniques, routes within rooms, building, between buildings, safety skills, classrooms, home and other familiar areas.
- **Sighted Guide**. Student's responsibility to ask for guide when needed, instruct a peer on how to guide, express needs enroute.
- **Use of Aids**. Monocular for distance vision, (if prescribed by O&M specialist) white cane, sunglasses.
- **Cane Skills**. Use cane appropriately, show responsibility in keeping track of cane. May use cane selectively, as determined by O&M specialist.
- **Residential Concepts/Skills**. Identify streets, curbs, boulevards, sidewalks, driveways, and understand positional relationships. Walk around block, locate specific objectives, cross quiet streets safely.
- **Map Skills**. Know compass directions, understand neighborhood grid layouts, plan routes.
- **Traffic Safety**. Experience and understand operation of traffic lights, walk lights, and basic traffic-flow patterns.

Issues	Suggestions
1. A new school environment. What needs to happen?	1. A blind or low-vision student may or may not have developed independent self-familiarization skills. If not, consult an O&M specialist or a certified teacher of the visually impaired.
2. Should this student have a locker? Will she or he be able to find it:	2. Yes, she or he should be treated like her or his peers. A visual clue on the outside could mark the locker for a low-vision student. Use of landmarks, or counting may help the locating task. A totally blind student may need specific route instruction and practice.
3. Will passing time be a problem?	3. It might be, depending on the skill level of the student. The student needs to know and be able to travel the routes in a quiet hall first. Allowing him/her to pass a few minutes earlier may help. An O&M specialist will be able to tell you what considerations are necessary for your student.
4. Will this student ever be able to learn routes to everywhere she or he needs to go, the gym, office, auditorium, cafeteria, locate seats on bleachers, or the auditorium?	4. Much depends on the student's skill and cognitive level. Yes, it is possible for some students. An O&M specialist will be able to determine the answer for each individual student. If these are concerns, make a referral for services.
5. What about changing schedules at quarter/semester.	5. Plan ahead so new locations and routes can be practiced and mastered before the change occurs. May only require a peer guide until routes are learned or it may require a mobility specialist or a teacher of the visually impaired.
6. I noticed that my student does not use his or her cane all the time. Should I say something?	6. Low-vision students may use their cane selectively—only in unfamiliar environments or specific situations. Totally blind students should use a cane more consistently. They may feel self-conscious and chose not to use it. If safety for the student or other students is at risk, consult an O&M specialist.

7. My student does not get involved in any sport/social activities. I'm concerned.	7. A judgment needs to be made about the root of the problem. It may be a social/psychological issue or it may be that the student does not have the necessary travel skills the activity requires. Consult with an O&M specialist or teacher of the visually impaired.
8. Can visually handicapped students be expected to get involved in community activities, dating, and other afterschool-related activities? I know they can't drive. Will their parents have to drive them everywhere?	8. Teaching the use of public transportation, community resources, business districts, complex street crossing are all part of O&M training. Level of competency will differ with each student. The goal is to achieve as much independence and involvement as possible.

Age Appropriate Expectations

- **Traffic Pattern Concepts**. One-way and two-way streets, lane usage (turning cars).
- **Traffic Controls**. Street crossing at two-, three-, and four-way stop signs, traffic lights (with turn arrow).
- **Address Numbering Systems**. Within buildings, in community, locate address
- **Self-Help Skills**. Solicit assistance, use phones, familiarize self to rooms, buildings, blocks, and communities, ask directions.
- **Bus Skills**. Plan and execute routes, locate objectives.
- **Night Travel**. Know self limitations, understand decreased pedestrian visibility, reduced driver vision, other safety factors.
- **Adverse Weather**. Experience a variety of weather conditions and their effects on travel, know limitations, make appropriate alternate plans

Daily Living Skills

The ability to perform everyday living activities normally contributes to a person's feeling of well being, enhances self-worth, and helps promote healthy social interaction. Many daily living activities are learned by watching other people. Because the opportunity for incidental visual learning is reduced or nonexistent, a blind or visually impaired child often needs special attention for ordinary living activities. Parents or teachers may notice skill deficits that require remediation, or they may have questions about normal development of everyday living skills. A teacher of visually impaired children can evaluate a student to determine strengths and weakness, and a program can be designed to address needs. Early assessment and early attention to daily living skills activities is crucial to normal personal and social development for a young visually impaired child.

Teaching daily living skills should be the responsibility of every significant adult caregiver involved with a blind or visually impaired child.

Consistency

Teaching daily living skills should be the responsibility of every significant adult caregiver involved with a blind or visually impaired child. The key to success is consistency. If a parent teaches shoe tying one way, the classroom teacher another way, and the lunchroom supervisor still another way, imagine how confused the child would be. In order to avoid confusion, it is important for the people involved to communicate and follow a consistent approach to teaching each skill. (See Appendix B)

Personal Care

Independent hygiene, dressing, and grooming are critical skills for a blind or visually impaired child. Self-image and social interaction skills are directly related to how a child appears to other people. The development of key skills is often affected by loss of vision.

Toileting skills may need special attention because the child's vision loss may affect mobility skills, and it may be difficult for the child to locate the bathroom. Physical orientation to bathroom facilities may be necessary; and physical movements relating to independent toileting may need to be shown co-actively, if the child cannot benefit from incidental visual learning.

Bathing, brushing teeth, washing hair, styling hair, cutting nails, applying deodorant, shaving, and using cosmetics may all require special instruction and extra practice for a visually impaired child to learn. Individualized, private instruction is frequently required. A teacher of visually impaired children can offer suggestions. It is important to keep in mind that vision loss alone should not prevent the development of these skills and that the student can learn to perform these tasks independently. Teachers and family members should not over-protect by doing the tasks for the child. Rather, they should encourage development and practice of independence.

Independent dressing skills are essential for a young blind child to learn. It may be difficult to learn to dress without vision, but parents and teachers of young blind and visually impaired children should encourage and expect

the child to learn to dress without help. This includes difficult skills such as snapping, zipping, buttoning, hooking, and tying shoes. It is important to teach a visually impaired child about color and pattern matching. Labeling clothes with braille tags providing color or pattern identification is one method to help insure acceptable dress combinations. Another method involves sewing french knots into inconspicuous places in the garments—one knot for green, two for blue, and so on. Teachers of the vision impaired and some blind children themselves will develop other methods.

Older visually impaired children need to be taught to keep up with trends in clothing and hair styles. "Fitting in" socially during the school years is often related to fitting in with current styles. This is difficult to do without vision.

Eating Skills

A child who is visually impaired or blind may find eating difficult, stressful, and embarrassing. The significant adults in a child's life need to make mealtime a positive experience. Instruction may begin with something as basic as finger feeding or tolerating different food textures. Sometimes chewing motions must be taught because they are not imitated visually. With some children, feeding needs should be assessed by an occupational therapist, some speech and language clinicians, and/or a vision teacher. Because eating is basically a social experience, skills should be taught at mealtime, with classmates or family members at the table. For the young or multiply-handicapped visually impaired or blind child there are several items available commercially to aid with eating. A piece of adhesive placed under the plate can keep it from sliding all over the table. Plates are available which have lipped edges so the food doesn't get pushed off. For the toddler, training cups are very helpful to reduce spillage and encourage the student to use a cup.

With a few simple adaptations, visually impaired children can develop neat, socially comfortable eating habits. For example, if peas or corn are difficult to scoop onto a fork, a piece of bread, knife, or spoon can be used as a "pusher." Food on a plate can be identified by feeling texture, by moving the fork around the plate, by touching various spots with the back of a fork tine. Some visually impaired persons like to have the location of food on a plate identified in terms of a clock face (meat at 12 o'clock, vegetable at 3 o'clock); others do not like the separate attention required for this.

With a few simple adaptations, visually impaired children can develop neat, socially comfortable eating habits.

Cutting food, especially meats, is difficult without vision and usually takes extra private or small-group instruction and practice. When possible, use real foods to practice cutting skills. Sliced raw potatoes or clay works well as a substitute for practicing meat cutting. Some teachers recommend using the continental eating method, because it dictates holding the knife in the dominant hand, the fork in the other hand, and thus requires fewer steps when cutting.

A blind or severely visually impaired child usually needs special help and extra practice to learn to pour, scoop, or serve food. Water, uncooked rice, or sand are good for practice. Students can learn to pour with one hand. They can also tell when a glass is full by sound or by hooking a finger over the rim to feel the contents.

When providing instruction and practice for a low vision child, an instructor gives special attention to the child's visual needs. Light, contrast, or glare can be adjusted to increase comfort during practice sessions. After initial skills are learned, the child will have to adapt and practice these skills in a variety of unfamiliar, unadapted environments. Practice sessions should be designed to promote success.

Each child will have his or her own needs and preferences in eating. A technique that works for one may not work or may not be acceptable to another.

Each child will have his or her own needs and preferences in eating. A technique that works for one may not work or may not be acceptable to another. Different environmental situations can also make a difference. For example, if a child is eating in the family home, tucking a napkin under the chin may be more acceptable than doing so in a restaurant. Drinking soup out of a mug instead of using a spoon and a bowl may be another acceptable home alternative. Asking for meat to be cut before it is served is acceptable in most restaurants. Making appropriate easier-to-eat menu choices can make restaurant eating less stressful. In all situations, visually impaired children should learn when and how to ask for help.

Kitchen Activities

Activities related to food preparation should begin at home when a child is very young. Most young sighted children go to the grocery store with their parents, or play with pots, pans, and plastic dishware while their parents work around them in the kitchen. For the visually impaired child, such activities should be purposefully initiated by the adult.

Young visually impaired children can accompany their parents to the grocery store. With a few exceptions, they can touch the food purchased, help choose, identify parts, and generally learn about what happens during a grocery shopping trip.

Visually impaired children need to associate the kitchen with certain sounds, smells, and activities. A blind child can be shown physically how to do many things. Hand-over-hand assistance often works best if the instructor stands behind the small child. Parental fears of having a blind or visually impaired child work in the kitchen can be minimized by stressing safety techniques and selecting only age-appropriate activities.

Many adaptive kitchen aids and appliances are available for the visually impaired. A good overview can be found in a publication entitled "Products for People with Vision Impairments" (see Appendix B). Many of these items are available form the Wisconsin Council of the Blind.

Activities related to food preparation should begin at home when a child is very young.

Most kitchen activities, however, do not require adaptive aids. With careful, systematic instruction and practice, most visually impaired persons can become adept at kitchen skills. Teaching a visually impaired child to work in a kitchen works best with a routine to follow, which includes putting things back as soon as they have been used. Organize the kitchen so the child can find items and label appropriate jars and containers with large print or braille to allow independent identification. It is especially helpful to label staples as soon they are brought home from the store and before they are put on shelves or counters. The older child can help with labeling.

Other Domestic Activities

One of the most important and often overlooked skills for a blind or visually impaired student to develop is the ability to remain organized. Without good vision, it is much more difficult to keep track of one's personal belongings. Parents and teachers can help the student organize the dresser, closet, bedroom, desk, locker, and other areas. The traditional, messy teenage room does not work well for a blind child.

Visually impaired children can perform household chores at about the same age as sighted children and should not be excluded from household or classroom responsibilities. They can learn to make their beds, clean their rooms, help with kitchen clean-up, and do other chores. They can be taught special techniques for dusting, vacuuming, sweeping, and scrubbing. Sorting, washing, de-spotting, drying, folding, and ironing laundry are also possible for them. So are simple sewing and mending skills. There are many simple labeling and marking adaptations available to help the visually impaired operate laundry, kitchen, and other household appliances. Telephone use, along with phone etiquette, are also important. Large print dials and other adaptations are available. A teacher of the visually impaired can answer questions about adaptations and teaching methods for domestic activities. (see also Appendix B).

Developing social interaction skills for blind and visually impaired children is a crucial and frequently neglected area of a child's education.

Consumer and Civic Activities

Consumer skills such as money-management, check-writing, shopping, and bill-paying require special adaptations. Coins can be identified tactually by size, weight, and edgings. There are a number of ways to sort personal paper money. For example, some blind persons fold each denomination a different way, or maintain separate areas of a wallet for different denominations. Signature guides and check-writing templates are inexpensive and are available from a number of sources.

Voting in public elections often requires certain adaptations for a blind or visually impaired adult. The Voting Accessibility for the Elderly and Handicapped Act of 1975 specifically addresses modifications for visually impaired voters. A teacher of the visually impaired can help make suggestions for adaptations for most consumer and civic activities.

Social Interaction Skills

Social Involvement

Developing social interaction skills for blind and visually impaired children is a crucial and frequently neglected area of a child's education. It is not uncommon to find visually impaired children who are succeeding in all areas of education except socialization. Visually impaired children must be encouraged to participate actively in school and community social, recreation, and leisure activities. Co-curricular activities should be made available to them. Parents and teachers may have to give an extra push to encourage participation and peer interaction.

Vision loss affects successful social interaction in several ways. Appropriate dressing and grooming, transportation, and dating issues all require discussion. Since so much social communication occurs visually, sighted high school students can learn to make eye contact with persons across a room, respond to a person who waves from a distance, or recognize a person who does not speak. A good program of affective education and individualized instruction in social skills can help prepare a child for a healthy social life, in spite of vision loss.

Stereotyped Behaviors

Stereotyped behaviors, or blindisms, are those physical behaviors (such as body rocking, head swaying, and eye poking) that are socially inappropriate because of their quality, frequency, or intensity. They are also observed in some persons who are not blind, so many theories and differing professional opinions exist about whether or how to eliminate them. Stereotyped behaviors restrict the child because a student exhibiting such a behavior is probably not paying full attention to the learning task at hand.

If it does not seem possible to extinguish a mannerism, the child may have to be taught to be aware of the behavior and to limit it to private or socially acceptable situations . . .

Various intervention programs can be implemented. For example, a consistent, subtle, nonverbal reminder (such as a touch) often works well. In general, if attention is given at an early age, many behaviors can and should be eliminated or be prevented from developing. Once they have become engrained habits, these behaviors are extremely difficult to alter in older children. If it does not seem possible to extinguish a mannerism, the child may have to be taught to be aware of the behavior and to limit it to private or socially acceptable situations (rocking may be okay in a rocking chair, for example).

Nonverbal Social Communication

It is important for visually impaired children to learn about nonverbal communication. They may need special help with their own skill development; and they should understand that sighted people frequently communicate with gestures and movements intended for visual perception.

Blind children should be taught to face or "look at" a speaker. Body language, gestures, and facial expressions are important as touching behaviors. A child who "sees" with hands much of the time needs to learn when it is appropriate to touch or not touch. For example, sometimes personal body contact, exploring food in a restaurant, or grocery store, or handling fragile or dangerous items may not be appropriate. Visually impaired children should learn about personal and social space and territory. For example, a child who cannot see may stand too close to a person with whom she or he is talking. An awareness of socially appropriate distance helps improve social acceptability. A teacher of the vision impaired can usually answer questions about nonverbal communication skills as they relate to vision loss.

Having a student with low vision in class can prove to be a exciting and rewarding experience for educators. For an overview, please read the chapter entitled "Preparing to Teach a Blind or Visually Impaired Student" before reading this section.

The vast majority of individuals who have been identified as visually impaired do have some usable vision. Although their vision is insufficient for certain tasks and cannot be corrected by ordinary glasses, some students are able to read regular print materials. Low vision also may create, however, a need for controlling clarity, size of an image, illumination, and contrast. Even low vision students who do not use print as their primary mode of reading or those who do not read can benefit from certain types of adaptations which take into account their residual vision.

Barraga discovered that the low vision students who used their residual vision did not lose it but rather, with proper training, began to improve their "visual efficiency."

The traditional "sightsaving" theory of education for low vision learners, which included blindfolds, dark rooms, and mandatory braille instruction for all visually impaired students, attempted to save sight by means of conservation. Advancing medical knowledge and the efforts of Natalie Barraga, a researcher in the area of low vision, proved these notions unfounded. Barraga, (1964) discovered that the low vision students who used their residual vision did not lose it but rather, with proper training, began to improve their "visual efficiency." She defined visual efficiency as "the most inclusive of all terms . . . visual acuity at a distance and at near range, control of eye movements, accommodative and adaptive capabilities of the visual mechanism, speed and filtering abilities of transmitting channels, and speed and quality of the processing ability of the brain are all related to visual efficiency." (Barraga, 1983)

Armed with the knowledge that low vision individuals could benefit form learning to use their remaining vision, expectations and educational programming for low vision students gradually began to change. It was soon discovered that some means of observing and measuring the manner in which the student was able to use vision to perform everyday tasks was necessary. "Increasing one's ability to use vision and therefor increasing one's visual efficiency may be considered the goal of instructional programs in the use of low vision. Prior to establishing such a program, however, a functional vision assessment is needed." (Corn, 1986).

"Increasing one's ability to use vision and therefore increasing one's visual efficiency may be considered the goal of instructional programs in the use of low vision.
—Corn

Barraga subsequently developed an assessment instrument (American Printing House for the Blind, 1970) that could be used to determine a child's functional vision skills. Somewhat later, she put together The Program to Develop Efficiency in Visual Functioning (American Printing House for the Blind, 1970), a program that includes a diagnostic assessment and plans that are useful in strengthening the deficient areas.

In addition to the materials developed by Barraga, a wide variety of functional vision assessment procedures have been developed. These evaluations must be performed by people who have been trained in working with and evaluating children with visual impairments. Often evaluation materials that teachers develop individually are more useful than those that organizations produce commercially because the teacher can specifically gauge and construct the adaptations to meet student needs.

The process of seeing and interpreting visual information is complex and multifaceted. Many elements and abilities combine to form an individual's complete visual system. The following skills have been identified by the American Optometric Association (1985) as components of the total vision experience:

- Clearness of vision (visual acuity)—the ability to see clearly at near or far distances.
- Eye movement skills (fixation ability)—the ability to point the eyes accurately at the object to be viewed and to keep the eyes on the target regardless of whether the object is moving or stationary.
- Eye focusing skills (accommodation)—the ability to adjust the focus of the eyes as the distance from the object viewed varies.
- Eye aiming skills (convergence)—the ability to turn the eyes inward or outward in looking from objects close up to objects far away and back again.
- Eye teaming skills (binocular fusion)—the ability to coordinate and align the eyes precisely so the brain can fuse the picture it receives from each eye into a single image.
- Eye-hand coordination—the ability to coordinate the information received through the eyes in order to monitor and direct the hands.
- Visual imitation and memory—the ability to reproduce patterns, letters, numbers, and other figures that have been presented in a look-remember-reproduce or a copy format.
- Visual discrimination—the ability to visually identify color, shape, size,and outlines
- Visual perception—the ability to differentiate between figure and background, form constancy as it relates to size, position in space, pictures, body image, and concept of objects in space.

To arbitrarily assign low vision aids to a student or to undertake a training program without fully understanding its implications or the child's eye condition is not in the student's best interest.

The presence or absence of these skills may effect three instructional areas: Vision Stimulation; Visual Efficiency Training; and Vision Utilization Instruction. These areas build upon one another in a systematic manner and should be included in the student's functional vision assessment. Once educators complete an assessment and identify needs, a training program can begin.

A training program which specifically addresses individual needs must be constructed and carried out only under the guidance of a trained teacher of visually impaired individuals who is working in conjunction with the student's eye care specialist and/or low vision specialist. To arbitrarily assign low vision aids to a student or to undertake a training program without fully understanding its implications or the child's eye condition is not in the student's best interest.

Vision Stimulation

Vision stimulation deals with the gross vision responses that are ordinarily present in infancy and very early childhood. The individuals who require this type of programming may be severely developmentally delayed or may be people with very low vision who have not had an opportunity to develop their visual abilities. The primary goal of vision stimulation is for the learner to become aware of and to give attention to visual stimuli.

Several types of programs have been produced which provide for stimulation of vision. *Look at Me* (Smith and Cote, Pennsylvania College of Optometry), *Developing Vision through Lights* (American Printing House for the Blind), *Sensory Stimulation Kit / Visual Component* (American Printing House for the Blind), *Bright Sights: Learning to See* (American Printing House for the Blind), and *Light Box and Materials Level 1*, (American Printing House for the Blind) are some examples of the more commonly used materials. (See Appendix B.)

Visual Efficiency Training

Visual efficiency training deals in part with the perceptual factors of vision use. Work at this level involves distinguishing patterns, strengthening visual closure skills, differentiating details and visual figure-to-ground relationships, developing of hand-eye coordination, and improving visual memory skills. Students who have perceptual problems directly related to their vision loss will most likely require this type of instruction. Students who have perceptual learning disorders due to problems which are unrelated to vision need to be referred for learning disabilities assessment.

In addition to the Program to Develop Efficiency in Visual Functioning, a great number of materials exist which facilitate efficient use of vision. Some of the more common training materials are *The Frostig Program* (Frostig and Horne), *The Visual Perception Big Box* (DLM Teaching Resources), *Visual Matching, Memory and Sequencing Exercises* (DLM Teaching Resources), *Dubnoff Program* (DLM Teaching Resources), *Fitzhugh Plus Program* (Allied Education Council), *Vangard Program* (DLM Teaching Resources), *Light Box and Materials, Levels 2, 3*, (American Printing House for the Blind), and a large variety of items that teachers either made or adapted. (See Appendix B.)

Vision Utilization

The third area, vision utilization instruction, relates to the use of optical and nonoptical aids and environmental modifications that enable optimal vision usage.

Optical Aids

Optical aids include hand held magnifiers and telescopes; stand magnifiers, both focusable and nonfocusable; head-borne aids, including spectacles, clip-on loupes, and telescopes; and press-on optics. The optical aids are prescribed only by a low vision clinic or by people who have been trained to dispense low vision aids.

Low Vision Clinic services are available in Wisconsin from the University of Wisconsin-Madison, Department of Ophthalmology; Gunderson Clinic in La Crosse; and the Curative Workshop of Milwaukee. These clinics require a referral from the child's ophthalmologist. For persons living in the outlying areas of Wisconsin, clinics in neighboring states may be more convenient. Also, the Department of Public Instruction sponsors several free low vision clinics throughout the state each year for visually impaired

children. These clinics are conducted at various sites and are staffed by personnel with a background in low vision, who prescribe and train the students in the use of the aids. (For more information on low vision clinics sponsored by DPI, contact the Educational Services Center).

The most common optical aids are corrective lenses. Many low vision students will wear glasses, some will wear contact lenses, and some students have nothing available that will increase visual acuity. Even with the best correction, a student who is visually impaired will function with vision in the range of 20/70 or less in the better eye, and/or with a visual angle of 20 degrees or less. Normal lenses correct only the refractive error, and do not magnify the image.

By magnifying an image on the retina, an individual may be able to distinguish an object being viewed. Devices that magnify the image are called low vision aids. Most students who have lenses or glasses will continue to use them while also using the low vision aid. Aids may be used for viewing materials at near range or at distances, and they come in a variety of types and styles.

Used for distance viewing, a monocular or binocular telescope is a handheld or spectacle-mounted device that may enable low vision students to read material from the chalkboard while remaining in their seat. This type of aid can also be useful in an auditorium or at sporting events because one eye is passive and it is difficult for the other to focus and concentrate. It is more comfortable for the student if used for short duration.

Even with the best correction, a student who is visually impaired will function with vision in the range of 20/70 or less in the better eye, and/or with a visual angle of 20 degrees or less.

The familiar hand-held magnifying glass, stand magnifier, and head-borne magnifiers are all used for near-viewing tasks and come in a wide variety of shapes, sizes, styles, and powers. The way the device is used will often determine what should be the best choice(s) for a particular student.

Nonoptical Aids

Nonoptical aids include lamps, reading and typing stands, filters, pinholes, tints, large print materials, bold line writing paper, visors, side shields, and typoscopes, dimmers, and signature and writing guides. A low vision specialist or teacher of the visually impaired can recommend these aids, and will require that the student be instructed in how to use them.

Electronic Aids

Electronic aids are also an important component of low vision facilitation. These include closed-circuit television systems, Viewscans, opaque and transparent projection equipment, and large print computer terminals. The teacher has a responsibility to seek out these materials and instruct children in their use. Electronic aids are frequently used by low vision students who are enrolled in public school programs. Many types of electronic aids have been developed in recent years, and certainly this trend is expected to continue. Some of the more commonly used devices are described here.

The closed circuit television system (CCTV) includes a camera, television monitor, mounting stand, and an x-y table (a bi-directional moveable surface). Print reading material is placed on the moveable x-y table and is

electronically projected onto the screen. The user can control the size of the image, the brightness, and the contrast. Some devices have adaptors for use with typewriters or computers. Both full color and black and white units are available. The machine also allows a student to choose between a positive or negative image display. For example, white letters appear on a black background, or black letters appear on a white background. For students with certain eye conditions, this is a very beneficial feature.

Residual vision is not damaged by use or the practice of holding reading materials very close.

The miniature CCTV is one of the newer types of technology rapidly gaining popularity with visually impaired students. This small, lightweight and totally portable unit can operate on battery current or AC current. It may also be interfaced with some types of large CCTVs for longer reading sessions. Consisting of a hand-held scanner and a display screen, the mini CCTV offers several sizes of magnification. The mini CCTV is an especially useful tool for the older student who may require a high degree of portability.

The Viewscan (Sensory Aids Corp) is a smaller electronic magnifier that displays the image on a neon matrix high resolution screen. The user places a small hand-held camera directly on a page of print and scans across the lines as the image is projected on the screen.

The large print computer monitor is one more type of electronic aid rapidly gaining popularity. Inexpensive full monitor magnifiers project an enlarged image from the computer screen. As the industry continues to grow, so do the capabilities of the computer modifications.

Print Modifications

Due to the efforts of Barraga and others, individuals with low vision are now encouraged to use their eyes as much as possible. Residual vision is not damaged by use or the practice of holding reading materials very close. Several modifications have been developed that may facilitate low vision sight. The most obvious, of course, is providing large print materials. The standard size for large print is 18 point. In addition to enlarging photocopiers, computers will allow easy converson from one font size to another, so producing a larger print copy is easily accomplished.

Not all visually impaired students require large print materials. Some learners, especially those who have a loss of visual field, may not need or want large print materials. If a student already has a restricted visual field, enlarging the print size will further limit the amount she or he is able to view at one time, as will the optical or electronic aids which magnify the image. A teacher of the visually impaired should work with the student to ascertain individual print requirements during the functional vision assessment.

Not all visually impaired students require large print materials.

Most commercial text books are printed in a size that is sufficient through the third grade. After this point, the print size is reduced and the amount of information included on a page is increased.

The crowding of too much detail in one area can cause as many problems for the low vision student as print that is too small. When presented with too much print and not enough white space, a visually impaired student may become confused or lost on a page. It may be necessary to cut apart the material and give this student only part of the page at a time. Magnetic place holders also work well for helping the student find his or her place. It

is likely that a student who has difficulty becoming oriented to the page will also need to use place holders when moving from book to paper and back.

Visually impaired students also may have difficulty with visual tracking. Many of these children are unable to scan a page for information or move smoothly from word to word or line to line. Drawing the student's attention to the location of page numbers and allowing the use of a pointer finger or line marker when reading are all acceptable.

Contrast is a key to better vision usage.

Large print books are generally produced with black print on white or off-white paper. When color clues are used to convey meaning, it may be necessary to provide the low vision student with a regular print copy to use in addition to his or her large print copy of the text. This will enable the learner to alternate, as needed, between the two books. He or she may also need to use a magnifier in conjunction with the regular print text. The vision teacher may also need to consider the type and size of pictures required by individual students for optimal viewing. Since the pictures in large print texts may be very poor quality, the student may again need a book with regular size print and, perhaps, a magnifier to be able to to view the pictures. If the print or background in an original text is colored, it will not reproduce well in large print. Be on guard for this in the student's copy.

Full-color, enlarging copiers are available in some areas. While the use of full-color copiers eliminates some of the above concerns, it is important to keep in mind that they may not be capable of the high contrast of the black and white equipment.

Contrast is a key to better vision usage. Since black and white print materials have long been identified as the most visible, avoid giving the low vision student purple dittos. Some visually impaired learners simply cannot see them. Others may see well enough to read them, but suffer from severe eye strain if forced to do so for very long. Teachers should provided these students with black and white photocopies whenever possible. If dittos must be used, a sheet of yellow acetate (available in stationary stores, sold as report covers) placed on top of the purple print will make it appear black. This will provide enough contrast for some students.

For certain low vision students, use black markers and manuscript writing or typing as much as possible when preparing worksheets. Only good quality typewriter ribbons should be used or laser printing in bold fonts, if available. Cursive handwriting is difficult to read. (see also "Language Arts/Communications") Placing a sheet of black construction paper behind the printed page will improve contrast, as will printing on only one side of the page. Black rubber mats placed on a light desk top may be helpful. Black markers and #1 pencils are often used by both the low vision student and teachers to enhance contrast. Outlining dim pictures, diagrams,and other materials may also be necessary. A commercially made typoscope or a viewing window cut from a black card improves contrast and helps the student mark his or her place when reading.

Low vision students also may need extra time to complete tasks.

Frequently washing the chalkboards will improve contrast. Attempt to write in fairly large, clear letters with generous spacing between items when using the board. Block letters usually work well for low vision readers. White chalk on chalkboards is the most visible. Black markers on white dry mark boards also work well.

Low vision students also may need extra time to complete tasks. When giving tests, teachers should stress power rather than speed. Break up the student's daily activities so that the visually demanding tasks do not occur in close succession. Visually impaired individuals often read at a slower speed than their sighted peers and their eyes will probably tire more easily.

Environmental Modifications

Optimal seating arrangements can be discussed with the teacher of the visually impaired. Front-center of the room is often the best location, but not always. For certain types of field losses, different locations would maximize viewing potential. Of course, a child should be expected to move around the room as necessary for viewing purposes. For some students, close seating will still not be sufficient.

Check also to see that the tables or desks and chairs that the student uses are at the correct height. Many low vision students will, over time, begin to develop neck and back problems because they bend down to see their materials. Typing stands and tilting desk tops are appropriate for low vision students and reading stands can also relieve some strain. Finding a suitable reading stand can be a problem, and some of the best and most useful ones have been homemade as opposed to commercially available stands which are large and obtrusive. The Wisconsin Council of the Blind distributes some recommended models. A wide shelf on which to place the book is an absolute necessity. Because large print books are heavy, the stand needs to be sturdy and not likely to tip over. Rubber bands will help hold the material in place and keep the books open; clamping bulldog clips also hold the pages together.

Another suggestion developed by Linda Roessing of the California School for the Blind is to attach two elastic bands to the top of the stand, about four inches apart. A plastic eyelet is secured to the bottom of each band, which can be hooked into a screw hook placed on the lip of the stand. The band can be unhooked to turn the page and free the child's hands to use other reading aids as necessary. Placing the stand on a rubber mat will keep it from sliding around as the student uses it.

Certain eye conditions cause losses of vision in a part of the visual field.

~~Certain eye conditions cause losses of~~ vision in a part of the visual field. Some students may demonstrate unusual head positions when they are viewing objects or they may not appear to look directly at an object when, indeed, they are seeing it. Some students may show a loss of peripheral vision. These individuals may bump into things as they pass by them or may not see someone approaching from the side, or objects above their heads or at floor level.

Color and color clues are used successfully by many low vision learners. Students can make identification tags for their belongings using brightly colored squares of tape. These tags will enable the student to quickly distinguish his or her own things from those of the other students. This is especially helpful when many similar looking items are jumbled together, and the low vision student must sort through a pile to locate something.

Some students rely a great deal on color to keep their world in order. Remembering the colors of the textbooks used for each class can make

locating them in a dim and crowded desk or locker a much easier process. Students with very low vision may rely on the use of hair and clothing color cues to identify individuals from a distance, especially when they are unable to see distinct facial features.

Increasing lighting should not increase glare.

Some eye conditions may cause varying degrees of color blindness in low vision students. While this is not a handicapping condition, it obviously may have implications in the student's ability to utilize color and color clues.

Lighting is another important consideration for visually impaired students. An individual student's lighting needs should be assessed by the teacher of the visually impaired and the child's eye doctor. Many, but certainly not all, low vision students prefer higher than average lighting. Some students' eye conditions cause photophobia or light sensitivity. For these students, additional light may be painful and actually reduce vision usage. Some students will exhibit "night blindness" or the inability to see in dim or darkened areas.

Increasing lighting should not increase glare. A shaded or hooded lamp directed at the student's work area is the easiest solution. A rheostat, or dimmer switch, is a desirable feature in a lamp. The American Printing House for the Blind and several other speciality companies sell lamps with these properties. Suitable lamps may also be sold by local vendors. Visors and absorbative lenses, which filter out ultra-violet rays, will reduce discomfort for light sensitive students. These children have more difficulty on bright sunny days, especially in the winter.

Many students, particularly those in middle school, are very self-conscious about using the adaptive equipment in front of their peers.

Classroom lighting conditions frequently change, depending on the time of day or year. Consider the student's entire school day when making lighting modifications. It may be necessary to install shades or cover windows in some manner to reduce glare. Additional lighting may be required during winter months.

Glare can also affect the work surface. Shiny desk tops may be covered during the sunniest times of the day. Optimally, the student should not face the window or work in his or her own shadow. The teacher should sit or stand in a position which directs the pupil's vision away from the windows. Pictures, charts, and other visual materials should never be placed between or adjacent to the windows. Visual materials with shiny surfaces will be subject to glare and may not be the best choice for visually impaired students. Obviously, materials which are very faded or soiled should be replaced.

One final consideration regarding the use of low vision aids and adaptive equipment relates to the student's attitude toward them. Many students, particularly those in middle school, are very self-conscious about using the adaptive equipment in front of their peers. Some students will not do anything that would make them stand out as different. While it is important to be sensitive to their feelings, it is also important to encourage them and their classmates to be tolerant of individual differences.

While it is important to be sensitive to their feelings, it is also important to encourage them and their classmates to be tolerant of individual differences.

Young students and those who are more emotionally mature seem to accept an aid more easily. It is simply another tool that will help them see better. Sometimes it is easier for everyone concerned if the student has used an aid for several years before reaching the middle and upper grade levels.

Children who have grown up with them are more likely to consider the adaptive aids and equipment an extension of themselves.

Guard against loading down children with too many tools. If a student does not need or want a certain piece of equipment, she or he is not likely to use it. Good maintenance practices are also important. A broken, lost or very dirty aid will not do the user much good. Lamps or lighting fixtures should be cleaned periodically and repaired or replaced as needed. The same rule applies for optical aids. The lenses should be cleaned frequently with a soft cloth and kept free of scratches.

If a student does not need or want a certain piece of equipment, she or he is not likely to use it.

A low vision student should have frequent rechecks of vision. Some visually impaired children will increase visual efficiency. Some, with degenerative eye conditions, may lose more vision. Thorough medical examinations and the doctor's input are essential components of programming for any visually impaired student.

References

Barraga, Natalie C. *Increased Visual Behavior in Low Vision Children.* New York: American Foundation for the Blind, 1964.

_____. *Visual Handicaps and Learning.* Austin, TX: Exceptional Resources, 1983.

Corn, A.L. "Low Vision and Visual Efficiency." In *Foundations of Education for Blind and Visually Impaired Children and Youth.* Ed. G.T. Scholl. New York: American Foundation for the Blind, 1986. pp. 99-117.

Eleventh Grade Daily Living Skill

Student: Mason Murphy
Low vision male 20/200 both eyes

Lesson: Tying a necktie

Case Study:

Mason is a 17-year-old student enrolled in the Aspen Grove School District. He is currently attending classes at the State Residential School for the Visually Impaired.

Additionally, Mason is mainstreamed for all academic classes at a local high school. Mason's vision loss is to Optic Atrophy. His distance vision is at the level of 20/200 in both eyes. Mason currently uses materials in regular print with a handheld magnifier for very small print items. He is involved in the school's Independent Living Program in preparation for college attendance following his graduation next year. Mason is developing his clothing care skills in a daily living skills class which meets three times per week in 50-minute sessions. The following is a clothing lesson.

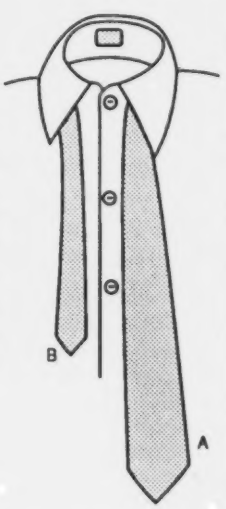
Objectives:

To learn how to tie a necktie, applying the four-in-hand method, without daily assistance.

Directions:

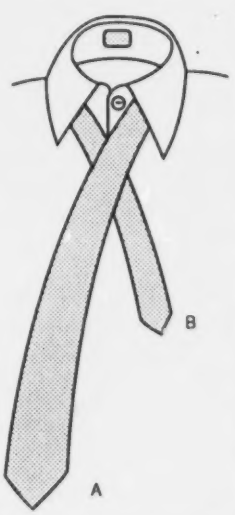
1.

Place tie around neck, under the shirt collar. Make the wider end of the tie hand closer to the waist than the narrow end. Name the wider and longer end of the tie **A**, and the shorter and narrower end **B**.



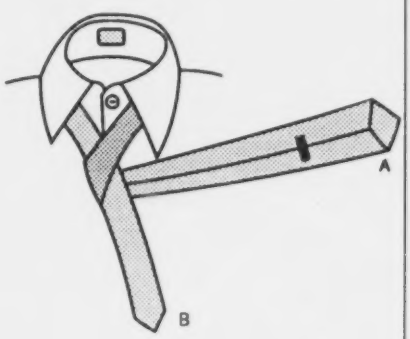
2.

Cross **A** over **B**.



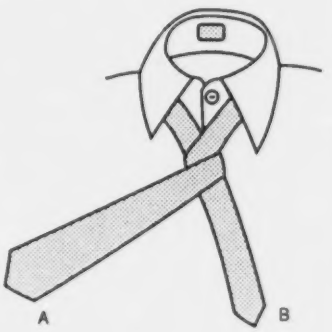
3.

Flip **A** around and under **B**.



4.

Then flip **A** back over **B**.



5.

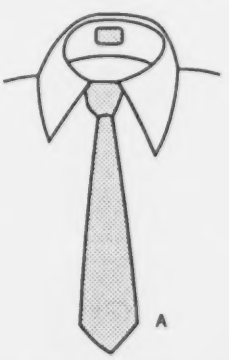
Pull **A** up, then through the loop that the tie makes around the neck.

6.

Pull **A** down through the newly-made **A-B** loop. Adjust and tighten the knot with both hands, so that the knot forms a "V" and will dimple.

7.

Fix the knot tightly around the neck, checking that **B** is shorter than **A**, and that **A** reaches the tip of the belt buckle.



Additional Exceptional Educational Needs

Cognitive Disability
Learning Disability
Emotional Disturbance
Giftedness
Speech and Language
Physical and Occupational Therapy

BEST COPY AVAILABLE

Cognitive Disability

The traditional educational model often is inadequate for meeting the exceptional needs of the blind or visually impaired student with an additional handicap.

Among the various additional handicaps coexisting with vision impairment, mental retardation [cognitive disability] is identified most frequently (Scholl, 1986). Wisconsin Administrative Code defines mental retardation as "significantly subaverage general intellectual functioning existing concurrently with deficiencies in adaptive behavior manifested during the developmental period" (PI 11.34, 2a Wis. Adm. Code). The Wisconsin legislature recently passed an act to amend all statutory language that refers to mental retardation. The term "cognitive disability" now replaces "mental retardation" in all statutes. The legal change has not yet affected the Wisconsin Administrative Code; therefore, this publication will continue to use the term "mental retardation" when referring to sections of the Administrative Code. (1991 Wisconsin Act 15)

Administrative Code defines three severity levels of mental retardation: mild, moderate, and severe and profound, based upon the degree of deviation from the mean for the general population. Extreme caution must be exercised both in the selection of assessment instruments and in the interpretation of test results. Most tests of general intellectual function have not been designed for use with visually impaired children and did not include visually impaired children in their normative sample. Therefore, real concerns regarding the validity of decisions made, based on the results from these instruments, need to be expressed. Warren (1984) presents a good overview of mental retardation and assessment issues. It is important to determine if developmental lags observed in concept development or adaptive functioning are the result of generalized retardation (overall lags in development) or due to reduced opportunities for learning (due to characteristics of the child's environment that may have produced selective lags).

A significantly wide spectrum of abilities and educational needs is possible for students whose developmental disabilities range from mild to profound. This requires distinct programming options for the student based on the severity and the level of adaptive behavior.

The traditional educational model often is inadequate for meeting the exceptional needs of the blind or visually impaired student with an additional handicap. The student's additional special educational needs affect the decisions made regarding school placement and the development of the Individualized Education Program (IEP). Further considerations and adaptations need to be addressed in order to provide the most appropriate program in the least restrictive environment for the mentally retarded blind or visually impaired student. This section will provide some general considerations and suggestions for serving the visually impaired child with the additional identified handicap of mental retardation.

Preparation

The teacher of the visually impaired and the teacher of the mentally retarded or multi-handicapped should work together to develop appropriate modifications for the mentally retarded blind or visually impaired

student. The following are general guidelines which will assist in working with students at all levels of severity:

- modifications should incorporate the student's functional vision. Find out what the student can see and use that residual vision in the instructional program. Color, contrast, distance, and size are a few considerations to keep in mind when designing an appropriate instructional program.
- modifications can provide age-appropriate activities and teach age-appropriate skills and behaviors. Observe the activities and behaviors of the student's peers, and then adapt those activities for the low cognitive level as well as for the vision loss.
- modifications should address mobility and safety needs. Tactual cues may be very helpful for the mentally retarded blind or visually impaired student. For example, a cup attached to a door may indicate the door to the lunchroom, or bolts attached to a card and fastened to the door may signify the door to the workshop.
- modifications should include social awareness and leisure skills.
- modifications should occur in the natural environment with real objects whenever possible. The mentally retarded blind or visually impaired student not only exhibits reduced intellectual functioning but also lacks visual input which makes it very difficult for the student to generalize from one situation or environment to another.
- modifications must be made in reinforcement feedback techniques; these must be meaningful. For example, tactual reinforcement, a pat on the back and verbal praise, will be more meaningful than visual reinforcement, like a smile or other gesture.
- modifications are made so that the student learns to act in a socially acceptable manner. The mentally retarded blind or visually impaired student often is involved in various self-stimulating behaviors. A joint decision should be made, involving the parents, professionals, and paraprofessionals working with the student, to determine if the behavior is medically harmful and should be extinguished. If the behavior is not medically harmful, then teachers and parents jointly should decide if the behavior should continue and in what environment or situation.

The mentally retarded blind or visually impaired student often has difficulty with social interaction. The student should be taught how to interact with others, when to interact with others, and how to accept various social interaction. The student should be taught skills and information so that he or she can relate to others. For example, when attending a sports event, the student should learn the appropriate time to clap and cheer.

The mentally retarded blind or visually impaired student often has difficulty with social interaction.

- modifications should incorporate skill repetition and practice which is meaningful and useful for the student. Mass trial, that is, practicing a skill repeatedly which in real-life is a singular action, is often confusing and useless to the student. For example, placing bread into a toaster ten times, when in a real-life situation is a singular task, may be confusing. If the student would benefit from repeated trials, making toast for other students at breakfast, or any other real-life situation where the task may be repeated, may be more meaningful. Another example would be practicing putting on a coat. It would be confusing to insist that the student put a coat on five times within the classroom setting. However, practicing it during times

such as going outside for recess, going on community trips, or going home for the day may be more meaningful.

Teacher Suggestions

Mild Mentally Retarded Blind or Visually Impaired Student. Adaptations for the mild mentally retarded blind or visually impaired student can easily be made by the teacher of the vision impaired with the help of teacher of the mentally retarded. Academics should be emphasized during the elementary and middle school years with vocational emphasis during the secondary years.

A multi-sensory approach may be helpful with the mild mentally retarded blind or visually impaired student. The student's learning will be enhanced greatly by frequent and comprehensive use of all modalities. Aids that assist visual modality include picture cues, appropriately sized word and/or number cards, and computers. Auditory flash card readers, cassette tapes, talking calculators, and records are helpful for the auditory modality. Manipulation and tactile aids are concrete objects for deriving mathematical calculations; adapted utensils for handwriting, painting, coloring, and cutting; calculators for students at the secondary level; and place markers which help the students keep track of their place in textbooks or workbooks.

Everyone working with the student needs to learn teaching methods and to be familiar with therapy practices.

Moderate Mentally Retarded Blind or Visually Impaired Student. Adaptations for the moderate mentally retarded blind or visually impaired student should emphasize functional living or "functional education" as the core of their educational program. Functional education is a program based on real-life skills necessary for independent functioning and/or partial participation in domestic, community, vocational, and recreation/leisure areas. The program teaches functional skills in the natural environment. Academics should not be completely excluded. The program should include academics as part of the functional life-skills instruction, but not focus on academics.

As with the mild mentally retarded blind or visually impaired student, the multi-sensory approach is useful for the moderate mentally retarded blind or visually impaired student. Independence on the part of the student is very important and should be emphasized.

Severe and Profound Mentally Retarded Blind or Visually Impaired Student. Adaptations for the severe and profound mentally retarded blind or visually impaired student should be determined by all concerned professionals, paraprofessionals, and parents working together with the student. With this approach, the student is not removed from the classroom or functional activity area to participate in various specialties; rather the therapist works in the classroom, or doing the activity teaching skills that are necessary in the relevant environment. Everyone working with the student needs to learn teaching methods and to be familiar with therapy practices.

Teaching all the normally sequenced prerequisite skills in isolation may not work with the severe and profound mentally retarded blind or visually

impaired student. Skills should be taught by first establishing the need and then teaching in context when that need arises. If the student needs to learn to hold a glass, the student should not just practice grasping objects in isolation to strengthen the grip. Rather, she or he should learn to grasp objects that are necessary and useful, during times when grasping actual objects is necessary The severe and profound mentally retarded blind or visually impaired student usually learns so slowly that the skill may never be learned if all the prerequisite skills are taught prior to using the skill. The rule of thumb is to teach the skill, not the prerequisite to a skill.

The rule of thumb is to teach the skill, not the prerequisite to a skill.

Often it is assumed incorrectly that the severe and profound mentally retarded blind or visually impaired student will have no means of communication. The student may be transported from class to class without becoming aware of surroundings or the purpose of the movement. The sense of touch, smell, or taste play an important role in establishing a communication system for the student. A spoon could represent lunch time, a tennis shoe could represent physical education class, and so on. It is important for the teacher of the mentally retarded or multi-handicapped to work with the teacher of the visually impaired and the speech and language clinician to establish an appropriate communication system for the student considering such factors as visual and tactual ability, vocabulary, range of movement, and positioning.

The modifications, adaptations, and teaching strategies will vary depending on the individual needs of each student. It is imperative that all professionals, paraprofessionals, and parents work together for the benefit of the student and the student's program. The statewide Education Specialist for the Multihandicapped Visually Impaired can assist with evaluations and program planning, and can be contacted at the Educational Services Center.

Learning Disability

Some students who are blind or visually impaired may also be identified as learning disabled. It is imperative that the teacher of the vision impaired and the teacher of the learning disabled work together throughout the assessment process so that accurate identification is made and result in appropriate placement and services.

The lack of vision, with the addition of atypical learning patterns, requires teaching strategies based on multisensory input and structured planning.

Students identified as visually impaired and learning disabled (VILD) often lack concrete life experiences and opportunities for incidental learning; this results in a smaller base of general knowledge than that of their nonhandicapped peers. These students are often weak in concept development, which affects all academic and nonacademic areas and presents a multifaceted challenge for educators. The lack of vision, with the addition of atypical learning patterns, requires teaching strategies based on multisensory input and structured planning (Silberman and Sowell, 1987). This section will present some general considerations and suggestions for working with VILD children.

Preparing for the Visually Impaired or Blind Student

The teacher of vision impaired and the teacher of the learning disabled should work together to develop appropriate modifications for the VILD student. They should include assessment and teaching strategies for ongoing skill development, for creating structure and for showing relationship. It is essential to strengthen a student's concept development through numerous direct experiences using all sensory modalities and feedback (see also: "General Considerations" and specific academic sections of this text).

It is essential to strengthen a student's concept development through numerous direct experiences using all sensory modalities and feedback

Teacher Suggestions

The best approach for the blind or visually impaired student with learning problems includes providing appropriate modifications for the visual needs as well as using teaching strategies to address the learning problems. The students need structure for many activities to ensure opportunities for broadening concepts about their environment. Following are general guidelines which will assist in working with the VILD student:

- Use techniques that are new for the student. Often the student has experienced failure and needs exposure to various instructional methods and materials until success is achieved.
- Use activities that allow the student to feel comfortable, confident, and relaxed with learning. Music, drawing, or language experiences may result in increased student motivation.
- Use remediation techniques that begin just below the student's functioning level so that the student will experience some success and feel motivated.
- Use small, sequential steps with immediate feedback for various learning experiences. Review at regular intervals to reinforce task mastery.
- Use various learning devices with the student so that there is a feeling of accomplishment. Learning devices will vary from student to student depending on that student's area of frustration and need.
- Provide keyboarding instruction for the student so that written work will be neat, and computers can be used efficiently.
- Use adjustments within the classroom which will reduce anxiety. Shorten assignments when there is a large amount of repetition; allow short paragraphs of silent reading rather than whole pages or three lines of handwriting rather than an entire page.

The students need structure for many activities to ensure opportunities for broadening concepts about their environment.

- Use classroom settings and work space free of distractions.
- Use adaptations which will introduce materials in a simplified and easy to follow format. Help the student know what to look for, provide study guides, provide references in the margins, or allow additional time to complete assignments.
- Use organizational techniques which will assist the student in organizing materials, assignments, schedules, and so on. The student with visual impairments and student with learning problems have difficulty with organization skills; however, the VILD student will have compounded problems with organization.
- Use study skills techniques as described by Silberman and Sowell (1987).

- Emphasize cooperation between all professionals and parents in the implementation of a well rounded curriculum and leisure time learning activities.

Emotional Disturbance

Blind and visually impaired students also may be emotionally disturbed. Emotional problems occur among the blind and visually impaired population at the same or slightly higher rate than among the sighted population (Scholl, 1986). As with the normally sighted population, some emotional problems of the blind and visually impaired seem to be related to their reduced or deviant interaction with their physical and social environments. Presented here are some general considerations and suggestions for educational programming for visually impaired children with emotional problems.

Practices and techniques used with sighted emotionally disturbed students usually are appropriate and useful with the blind and visually impaired.

Preparation

The teacher of the visually impaired, the teacher of the emotionally disturbed, and involved mental health professionals should work together to develop appropriate modifications for the emotionally disturbed blind or visually impaired student. A thorough review of the child's educational and medical records, including a thorough review of the child's eye condition, begins this process. Some eye conditions are associated with behavioral manifestations that may be misinterpreted as symptomatic of an emotional problem, or conversely, which may be correlated with emotional problems. Attention must be given to a student's social interaction skills, concept acquisition, cognitive abilities, school achievement, personality traits, and adjustment to vision loss. Cultivation of self-assertiveness based on a positive self-concept is an important task in educating many emotionally disturbed students.

Teacher Suggestions

Practices and techniques used with sighted emotionally disturbed students usually are appropriate and useful with the blind and visually impaired. However, special attention must be given to the following areas when working with the visually impaired.

Social Interaction. Blind and visually impaired students (a) tend to be socially immature and remain egocentric longer than their sighted peers; (b) have a tendency to be socially isolated or have feelings of social detachment; (c) may be passive and dependent on others; (d) may display behavior or mannerisms which are inappropriate and socially unacceptable; and (e) must learn to deal with the public's stereotyped misconceptions and attitudes about visual impairments (Tuttle, 1987). Following are general guidelines for working with the emotionally disturbed blind or visually impaired student in the social interaction area:

The process of adjusting to the vision loss follows the same patterns as adjusting to any severe trauma or significant change in one's life.

- Draw attention to the student's environment and what is taking place within that environment.
- Assist the student in positive interaction with peers, teachers, parents, and others within the environment. Encourage the student toward active participation in the community social, recreational, and civic affairs to facilitate development of social skills.
- Require the student to be responsible and to accomplish tasks independently.
- Discourage inappropriate behavior and encourage more socially acceptable behaviors.
- Give the student the opportunity to learn and react to common misconceptions and attitudes about visual impairments.
- Assist the student in developing a sense of acceptance and self-worth.
- Emphasize the positive, the abilities and the assets, while maintaining a realistic perspective.
- Instruction must be articulated clearly, without relying on facial expressions and body language to convey meaning.
- Give positive feedback and encouragement when deserved.
- Answer the student's questions frankly and accurately.

Adjusting Process. Students with visual conditions which are not hereditary and that may have been acquired or caused by an accident after birth (adventitiously impaired) may experience adjustment problems. Students with visual conditions occurring at birth (congenital) do not experience the same sense of loss as the students with adventitious visual conditions, although they may have some difficulty accepting their disability.

The process of adjusting to the vision loss follows the same patterns as adjusting to any severe trauma or significant change in one's life. Blind and visually impaired students proceed through the phases of trauma, shock and denial, mourning and withdrawal, succumbing and depression, coping and mobilization, and self-acceptance and self-esteem. Often family members of blind or visually impaired students will also proceed through the adjustment phases. At times this will cause some difficulty for the blind or visually impaired student. The feelings and behaviors projected by the student may not be solely their own but also reflect those of family members.

Adolescence and puberty can pose special problems for the blind or visually impaired student. Social mannerisms, styles, and current fashions are increasingly important, and peer acceptance is greatly influenced by appearance and behavior. In the adolescent years, issues such as dating and obtaining a drivers' license are significant rites of passage. In order to assist the blind or visually impaired student with these potential problems, sensitivity toward these issues in both the home and in school is necessary. Following are general guidelines which will assist in working with an emotionally disturbed visually impaired student in the adjustment process:

- Prepare the student through rehearsal for a potential stressful situation in order to reduce or minimize its impact.
- Be a good listener and provide support and understanding.
- Confront the student gently but persistently with the reality of their situation.

- Provide some easily mastered, practical solutions to personal and social management problems.
- Structure and provide appropriate activities to occupy the student's personal time.
- Assist the student in developing realistic and attainable goals.
- Provide an opportunity for the student to interact with a blind role model.
- Assist the student in developing healthy attitudes and feelings toward blindness, self and others.
- Provide realistic feedback within a context of support.
- Instill in the student a desire and ability to continue to grow in self-understanding, in the understanding of others, and in problem-solving skills.
- Be consistent in expectations and in following treatment programs.

Giftedness

Until recently, children with handicaps were only rarely identified as being gifted. Children with disabilities have been generally excluded from normative samples used in test development and are usually unfairly discriminated against by tests designed for nonimpaired children. Similarly, the typical criteria checklist used to identify gifted sighted students is inadequate for use with the gifted blind or visually impaired students. Furthermore, the visually impaired tend to have different learning styles and few professionals understand and feel comfortable evaluating children with this handicap. Available programs for the gifted focus on enrichment activities which require some vision and are often inappropriate for the sensory limited students. Consequently, gifted blind or visually impaired students are often underserved even when programs are available for the nonhandicapped student (Scholl, 1986).

Gifted blind or visually impaired students are often underserved even when programs are available for the nonhandicapped student.

Giftedness in the visually impaired individual is not recognized readily without the use of modified screening criteria. Johnson (1987), a teacher of the visually impaired, and a specialist in training the gifted visually impaired, presents the following modified checklist for use with visually impaired children. (See Figure 3)

Figure 3

Checklist to Determine Giftedness

Refer a child if the answer is "yes" to three or more of the items.

1.	☐ Yes	☐ No	Is curious about many things.
2.	☐ Yes	☐ No	Is perceptive of the environment.
3.	☐ Yes	☐ No	Becomes impatient when an explanation is "fuzzy."
4.	☐ Yes	☐ No	Has a good sense of humor.
5.	☐ Yes	☐ No	Is sensitive to injustice.
6.	☐ Yes	☐ No	Understands quickly and easily.
7.	☐ Yes	☐ No	Has original responses.
8.	☐ Yes	☐ No	Has a lively imagination. (You have to have a very good imagination to understand what you cannot see.)
9.	☐ Yes	☐ No	Originates many ideas from a stimulus.
10.	☐ Yes	☐ No	Becomes excited about learning because it is fun.
11.	☐ Yes	☐ No	Has accelerated academic achievement in relation to peers.
12.	☐ Yes	☐ No	Scores in average or high average range against sighted children in one or more areas.
13.	☐ Yes	☐ No	Has advanced vocabulary for age or grade level.
14.	☐ Yes	☐ No	Has quick mastery and recall of facts.
15.	☐ Yes	☐ No	Understands abstract concepts (very difficult for blind children).
16.	☐ Yes	☐ No	Wants to be independent.
17.	☐ Yes	☐ No	Is willing and eager to try new things.

Preparation

The teacher of the vision impaired and the teacher of the gifted should work together and share information about the student's abilities and disabilities in order to develop appropriate modifications for the gifted visually impaired student. Together they should plan adaptive assessment and teaching strategies; and coordinate the establishment of realistic goals relating to intellectual talents, creative expression, and physical and social needs.

Often, due to success and reinforcement a gifted visually impaired child experiences in academics, the development of recreation and socialization skills may be lacking. People working with these students should be attuned to those needs, and encourage a well rounded life. Special attention may be necessary to meet the emotional needs of the gifted blind or visually impaired child, particularly if a significant gap exists between the child's emotional and intellectual development.

Use techniques that allow for a multisensory approach to learning.

Teacher Suggestions

To meet the educational needs of the gifted blind or visually impaired student, modifications which maximize the student's achievement may occur in a variety of settings. The student may be placed in (a) a regular classroom and receive support services from the teacher of the vision impaired and the teacher of the gifted; (b) a program designed for gifted and receive support services from the teacher of the visually impaired, or; (c) accelerated classes for some subject areas and receive support services from the teacher of the vision impaired.

Following are general guidelines which will assist in working with the gifted blind or visually impaired student:

- base the specific program and the modifications of the materials on the individual needs of the student.
- recognize that the gifted blind or visually impaired student will most likely not have the same characteristics as the gifted sighted student.
- use techniques that allow for a multisensory approach to learning.
- allow the student to have input into the mode of obtaining and producing information.
- use learning areas free of distractions.
- use the student's individual strengths to aid in the development of appropriate recreation skills.

The question is often asked whether blind children acquire language in a traditional developmental pattern or in a nontraditional fashion. Evidence exists that language acquisition may be different for blind children than for their sighted peers. We can assume that just as vision influences cognitive development, it also influences the strategies children use in acquiring and using language. Therefore, analyzing and assessing preverbal indicators, vocabulary, word order, and grammar use are critical issues in determining communication skills.

Meaningful communication may be the most vital skill a blind child needs to acquire. However, because of the lack of visual support, visually impaired children miss important cues to meaning. Both semantic ability and communicative competency can be compromised as a result of the visual impairment. Communication breakdown can occur resulting in ineffective social interaction.

. . . language acquisition may be different for blind children than for their sighted peers.

Early Communication

In normal language development, infants learn to communicate largely because their caregivers easily and meaningfully interpret their visually perceptible behavior. The infant's attention is held while he or she is able to elicit positive responses. The essence of communication power begins to emerge. This is accomplished by establishing cues which secure the comprehension of the listener. The child then, is able to communicate the message in a way that enhances the probability of a listener's response. This is dependent largely on the development of reciprocal recognition of imitation skills, comprehension, the relationship of agents to actions, and cause and effect.

Early communication of blind and visually impaired infants is affected by a number of factors. Language development is dependent upon the onset of blindness, the severity of the vision loss, physical and cognitive development. The scope of communicative responses is restricted. Early communication-related behavior of visually impaired infants can be difficult to identify and predict, thus making the communicative intent difficult to interpret. The absence of gaze and gesture make it trying for parents of blind infants to engage in rewarding and productive interaction. Feelings of helplessness and inadequacies further complicate the communication process. As a result, parents may resort to providing the responses for their child. Ultimately, the child's language becomes more restrictive, thus, limiting the chances for reciprocal interaction.

Becoming aware of the infant/child signs of interest and recognizing even the weakest signals help the parent know when to communicate with or respond to child- initiated communication. The socially based patterns of preverbal communication are essential between caregiver and infant in the first year of life. While the interaction occurs, the interrelationship of experience and meaning can be developed without sight. One must keep in mind, however, the need for nonverbal cues such as sound, touch, taste, and

smell. Therefore, the role of the parent/adult caregiver and their impact on language development are critical.

It is necessary, then, to design a carefully structured program of parental/caregiver responses which may enhance the communication skills of visually impaired children. The following suggestions may be useful when supporting parent/caregivers of blind/visually impaired infants:

- Verbal prompts should be short, well-formed sentences.
- Verbal prompts should use a raised pitch, exaggerated intonation, and a slow rate.
- Verbal prompts should focus on the here and now .
- Vocalizations should be reinforced as frequently and consistently as possible.
- Vocal reinforcement should be provided shortly after the infant stops vocalizing so the infant is not interrupted and the turn-taking pattern is reinforced.
- The contrast between parental vocalization and silence should be established with the use of a tactile cue.
- Vocal reinforcement by parents should include the imitation of the infant's sounds, both verbal and preverbal.
- A constant barrage of verbal commentary by parents/caregivers should not be used. (Rowland, 1984)

Assessment

In Wisconsin, deficiencies in speech and language skills are an identifiable handicapping condition. As with all suspected handicapping conditions, initial referrals for speech and language evaluations should be preceded by the appropriate referral procedure in accordance with due process. Once the referral has been made, the clinician can initiate diagnostic procedures. Familiarizing oneself with the background information concerning the visual diagnosis and consulting with the services of the teacher of the visually impaired will assist in determining the adaptations needed during the assessment process. The following adaptations may be useful in preparing for assessment of blind/visually impaired children: appropriate lighting, enlarged print (respectful of copyright laws), magnifier, reading stand, black and white test foils for low vision, and object use in place of visual stimulus as needed.

Familiarizing oneself with the background information concerning the visual diagnosis and consulting with the services of the teacher of the visually impaired will assist in determining the adaptations needed during the assessment process.

As in traditional assessment procedures, both informal assessment and formal diagnostic tools are used to complete an evaluation. Informal assessment plays a significant role in the overall evaluation process for the blind or visually impaired child, particularly in cases involving severely multi-handicapped children. Through formal and informal assessment, observable behavior, and a more extensive analysis of signals, semantic/syntactic usage (word meaning and grammar) and intent can be determined. Since some of the behaviors may be more typical of visually impaired children, analysis is needed to assess the extent of these behaviors. The following are linguistic strategies which may be characteristic of some blind children:

- frequently observed is "verbalism," a parrot-like repetition of words without understanding or meaning.
- both immediate and delayed echolalia are also frequently observed in visually impaired children.
- blind children use descriptive color words less frequently than do their sighted peers; however, establishing color concepts needs to be addressed on an individual basis.
- blind children use fewer "see" verbs than do sighted children, and many of the "see" verbs appear in grammatical constructions with meanings unlike the traditional meaning used by sighted peers.
- blind children are more prone to personal reference mistakes but demonstrate potential for proficiency in this area.
- blind children may use more question forms to secure information, for orientation purposes, and for conversational control and maintenance.
- blind children may use fewer question forms due to cognitive development or lack of experiences.
- blind children make minimal use of communicative gestures with or without verbalization. This can result in unresolved confusion of word meaning.

Children who lack sufficient vision to see details often lack concepts and maybe unable to integrate components in their environment. The concepts which are most often affected are listed in Figure 4.

Visually impaired infants are limited and sometimes void in the their ability to interpret facial expression and body language.

Communicative competence is also an area of particular concern in blind/visually impaired children. Visually impaired infants are limited and sometimes void in the their ability to interpret facial expression and body language. This affects significantly language development which ultimately forms successful, meaningful communication. Gaining communicative competence not only entails encoding and decoding of messages in isolation, but also involves learning how to use these messages to perform communicative functions. The evaluation process, then, determines the efficiency of nonverbal and verbal indicators related to pragmatic development. Assessment must focus on the communicative intent of the utterances and, more importantly on what effect they have on the communication process and to what extent.

When formal assessments are implemented, considerations of adaptations of the tests will be dependent upon the child's visual acuity. That is, specific subtests may be omitted and only portions of the tests may be administered. An example of such an adaptation is the Clinical Evaluation of Language Functions-Revised. If it is determined that residual vision is not enough to support responses to visual subtests, only verbally prompted subtests are administered. The validity of the assessment has been altered and should be noted in the diagnostic report. Since many tests are available, the clinician should consider assessments which best meet the needs of the visually impaired child, their familiarity with the instrument, ease of administration, adaptability, and the test's ability to provide valuable diagnostic information. The following tests have been used successfully with the visually impaired children. Some of the testing instruments need modifications in order to proceed with administration.

Body Awareness
top
bottom
back
front
body parts

Kinesthetic Awareness
turning
direction of motion
moving
still
gravity

Proprioceptive Awareness
bending parts
head up
closed fingers
feet together
posture

Sensations
feelings
smell
taste
touch
hearing
sight

Facial Expressions
smile
frown

Gestures
nod yes
shake no
shrug
point to object
shake hands

Environmental Awareness
street intersections
crosswalk (see also, Orientation and Mobility)

Awareness of Object Characteristics
size
shape
color
sound
texture

Time Awareness
begin
end
before
after
first
next
last
during
always
never
old
new
young
slow
fast

Time-distance Relationships
today
yesterday
tomorrow
morning
noon
night
afternoon
evening
sunrise
sunset
day
week
month
year
second
minute
hour
present
past
future

Spatial Awareness
on
off
above
parallel
perpendicular
round
arc
plane
middle
center
between
opposite
straight
crooked
curved
to
from
high
low
top
bottom
directions

Actions
skip
run
jump
hop
climb
crawl
stand
sit
step
snap
zip
push
pull
kick
slide
roll
stop
start
follow
forward
reverse
backward
sideways

Quantity
all
some
none
pair
equal
least
less most
more
several
few
many
zero
with
without
operations of math and measurement

Emotional and Social Awareness
distinguish I from You
discriminate parent from stranger
self-concept
human sexuality
concepts
manners
grooming
body language (verbal and nonverbal)
feeling concepts

- Birth-to-Three Developmental Scale
- Tactile Boehm
- The Boehm Test of Basic Concepts Preschool Version
- The Test For Auditory Comprehension of Language-R
- Peabody Picture Vocabulary Test-Revised (L or M)
- The NonSpeech Test
- Zimmerman, Steiner, Evatt Preschool Language Scale
- Test of Language Development-Primary
- The Test of Language Development-Intermediate
- The Detroit Tests of Learning Aptitude
- The Clinical Evaluation of Language Functions-R
- The Word Test
- Language Processing Test
- Test of Language Competency

. . . testing instruments need modifications . . .

Therapy Considerations: Adaptations and Materials

Both similarities and differences exist in all therapy considerations and communication curriculum for visually impaired children. All children, regardless of etiology, who meet the entry criteria for a Speech and Language services, must have an Individualized Educational Program (IEP). Goals are based on individually assessed needs and sequenced according to developmental norms. Parents, teachers, and clinicians together form an integral part of the therapy process.

The differences, then, are the adaptations needed to modify the therapy techniques and materials for the child's vision loss. There are many techniques and adaptations which can be implemented. As in the assessment phase, a teacher of the visually impaired should be consulted when preparing adaptations and strategies for the visually impaired child. The following adaptations are commonly used with visually impaired children:

- use adaptive equipment such as a Language Master, tape recorder, low vision aids, braille writer, reading stand and computer voice, typewriter.
- use a multisensory approach to activities.
- use of large simple pictures, minimizing figure ground detail for low vision students.
- provide appropriate background contrasts, such as black on white.
- substitute objects for pictures (toys, household items, utensils, dishes, pots and pans, clothing, actual food packaging, tactile shapes.)

There are many techniques and adaptations which can be implemented.

- provide the appropriate recommended positioning necessary to maximize visual efficiency.
- participate in team approaches for functionally based programs of multihandicapped students with limited cognitive development.
- participate with parents and teachers in activities involving functional life skills, (domestic, vocational, daily living and leisure, community).
- use Closed Circuit Television (CCTV) to enlarge reading material.
- provide enlarged printed materials (respective of copyright laws).
- use braille when reading for verbal expression exercises.
- use braille on game boards.

- use corrugated paper, straws, raised line glue on game boards or activity sheets to provide tactile boundaries or barriers.
- use thermoforms of various objects and shapes for activities involving sequencing patterns, identification and labeling skills.
- use tactile awareness in recognition and distinction of sound features; tactile awareness of phonatory features.
- use clay to enhance tactile awareness of shape and texture.
- use sand in play to develop tactile awareness.
- use objects to develop comprehension of the environment.
- use tapes and records of music and environmental sounds.
- use computerized material with a voice actuator when available.
- provide sound source information: footsteps (convey approach of others), source of danger (car engine, electric fan), echoes (may indicate presence of a wall nearby), fixed sound sources (clock, radio, VCR).
- provide experience in the sense of smell (olfactory) through lessons involving: scents of spices, foods, animals, safety vs. danger features (smoke), odors, perfumes, smells of newness (furniture, clothes, flowers) and spoilage. These can provide valuable information in identification skills, labeling, categorization skills, opposites, and similarities.
- provide opportunities for identification and labeling through the sense of taste. These can promote concepts of texture, liquid, solid, salty, sweet, sour, bitter, lumpy, gritty, bland,
- use sign language to facilitate communication.
- use gross motor activities such as water play, and others, to enhance proprioceptive ability, imitation skills, concept development, sequence activities, short-term memory activities.

Substitute objects for pictures (toys, household items, utensils, dishes, pots and pans, clothing, actual food packaging, tactile shapes.)

The purpose of this speech and language section is twofold: to present information concerning the unique characteristics of linguistic strategies used by some blind and visually impaired children and to provide suggestions which will assist in developing adaptations for assessment procedures and therapy activities. While impossible to include all the necessary adaptations, it is hoped that the resources will direct to the appropriate sources to best meet the needs of visually impaired children.

Physical and Occupational Therapy

Visual impairment and blindness has a profound impact on all developmental areas of children. The visual system does not work independently of the other systems. It works in consort with the other senses and is difficult to isolate. Vision is what people use to confirm and reinforce what they have heard, felt, and experienced with movement. This can be demonstrated in how the lack of vision impacts on motor developmental milestones as well as the sensory systems of auditory, vestibular, and proprioception and tactile systems.

The occupational and physical therapists' involvement with visually impaired children can be many-faceted. Early detection of developmental

problems is vital for purposes of intervention, treatment, and organized follow-up. Treatment objectives often include: 1) facilitation of normal development (gross motor, fine motor, play skills, and social-emotional growth); 2) the organization of the tactile, auditory, vestibular, and proprioceptive systems; and 3) parent/child involvement. Treatment models and suggestions will be provided to the therapist to assist the classroom teacher in therapy intervention.

. . . the lack of vision impacts on motor developmental milestones as well as the sensory systems of auditory, vestibular, and proprioception and tactile systems.

It is imperative to note that this section is meant to be informational, as opposed to instructional. This guide does not suggest that classroom teachers absorb the responsibility of physical or occupational therapy. In order to better understand the blind and visually impaired students in their charge, regular classroom teachers need information. However, physical and occupational therapy is a serious discipline that requires years of education and training. This section provides teachers with an expanded foundation of knowledge, so they can serve as informed observers of visually impaired students. In this way, classroom teachers assist the therapists without feeling the responsibility for providing therapy itself.

Facilitation of Normal Development

Gross Motor Skills: According to Nobles (1982) visually impaired children are often slower than their sighted peers in developing extensor muscles of the neck, back, and legs. The primary reason for this delay appears to be the lack of visual input.

Hamilton (1982) reported that in the newborn to two-year population of blind children there was evidence of poor tolerance of the prone position with extension against gravity, general low tone with weak musculature, delayed head righting, and increased time on the floor before moving up against gravity. It is clear how the normal sighted infant can use early skills to build on and provide feedback to increase motor development.

Some blind and visually impaired children develop tightness and show loss of range of motion by the time they reach school age. This can occur from being inactive or not moving their bodies through a full range of motion during play. A typical example of this would be a child who sits in a ring sitting position (hips externally rotated, fixed, and abducted, the knees flexed, soles of the feet together) with head down. Generally this posturing causes the flexor muscles to tighten. If this happens too often, the muscles are unable to accommodate a better sitting position. This is a vicious cycle which is hard to break, even with physical therapy.

Balance . . . can be poor in the blind and visually impaired child.

Balance, which is greatly assisted by vision, can be poor in the blind and visually impaired child. This may be the result of the lack of vision or the decreased opportunity for regular physical activity through which balance is refined. During moving about, poor balance may be observed in the following ways:

1. Arm movement. Reciprocal arm swing is often nonexistent. The arms may be held in a static position at chest level (high guard position) or in a static position at thigh level (low guard position).
2. Pelvic rotation. Often the blind and visually impaired child will have limited pelvic rotation and flexibility during ambulation.

3. Base of support. The base of support is usually widened to provide stability and prevent falling while walking. This is demonstrated in the visually impaired child in the following ways: walking with feet wider apart, walking flat footed; shortened length of steps and/or toeing out.

To walk with a heel-toe progression requires a certain amount of balance skill as there is that moment of instability when the weight is being transferred to the opposite foot having only the heel in contact with the ground. When balance is impaired, the child will tend to place the entire foot on the ground at the same time to avoid that brief moment of instability.

Fine Motor Skills: Prehension is an area of delayed development because functional hand behavior is based on the coordination of eye and hand. Vision mediates this process and therefore coordinated use of the hands may not evolve in the absence of vision. Ear-hand coordination does not occur with the visually impaired until 11 to 15 months of age. These delays cannot be compensated for totally because auditory development does not provide the same adaptive changes as visual development. While visual cues are constant and can be used for orientation, auditory cues generally are of short duration and therefore are difficult if not impossible to follow.

It is generally assumed that fine motor skills develop along with gross motor skills. The additional occurrence of tactile defensiveness and/or decreased proprioceptive input may effect fine motor development. In the school aged visually impaired children deficits are prominent in proximal weakness of the shoulder girdle as well as mass hand grasp and finger strength. This is evidenced with the low vision child with problems in performing activities of daily living (dressing and eating), tool usage such as holding pencil in a tripod grip, or working with small manipulatives which require a fine pincer grip.

Auditory cues are generally of short duration.

Play Skills: Play is an important method by which the child learns to increase mastery and control of the environment. Development of play behaviors in blind children can be limited by the inability to view at a distance, the inability to imitate actions of others and the delayed development of functional play skills. An example would be a sighted six-year-old who plays house and from observation knows how to use a stove, set a table, or wash dishes. The blind child is not aware of how to perform these daily tasks unless someone physically manipulates him or her through the activity. Blind children require repetitive hand-over-hand teaching of childhood tasks that are usually accomplished incidentally by a sighted child. Many of these children do not learn well from verbal direction.

Social Emotional Skills: Smiling is a social reinforcer of superior magnitude. It is this circular parent-child interaction with child and parent's eye contact that is part of the attachment process. Sonkson explains that this eye contact is a spark of the drive that parents need for interaction. Frequently, smiling in blind children may be less spontaneous, inappropriate, or lacking altogether. Delayed smiling is an expected consequence of blindness because the infant does not have the visual stimulus of his or her parent's face. Part of the reason for difficulties in parental attachment are that meaningful sounds must be first identified with a loving caring voice.

Delayed smiling is an expected consequence of blindness . . .

Until this is accomplished, blind infants will be unable to form effective emotional ties with their parents. The familiar voice is the prime elicitor of the smile and has been observed in blind infants as young as four weeks. By two and one-half months the blind child will smile more frequently to mother and other important people but there is not a stimulus except gross tactile stimulation (tickling) which regularly elicits a smile.

Organization of the Tactile, Auditory, Vestibular, and Proprioceptive Systems

Tactile: Blind children may also experience tactile hypersensitivity or defensiveness. Conversely, many of the children also seem to have a decreased awareness of tactile stimuli. This is not a direct result of the blindness but may be due in part to the limited exposure to a variety of tactile stimuli. The tactile system is one that is even more vital to the visually impaired child since braille may become their mode of learning. They also will use it to gain the vast majority of information about their environment, so this system needs to be as sophisticated as possible.

Auditory: The popular myth that auditory skills are automatically improved when the child is blind is just that, a myth. Auditory awareness must be taught so that sounds have a specific meaning. Care must be taken so that the child does not habituate to something and then tune it out. One example is when children listen to a tape for a lengthy period of time and soon are not even concentrating on what is being said on the tape. Taped material that is listened to without active participation for longer than three minutes is habituated to and thus becomes a type of "white noise" or background noise that is largely ignored.

Vestibular: Vestibular is the sensory system that responds to the position of the head in relation to gravity and quick head movements. Vestibular input occurs when the child is on swings, scooter boards, vibrating objects, or spinning equipment. This type of input helps to improve balance, coordinate head and eye movements, increase language output, and improve attention.

Visually impaired children who do not experience movement early in life, do not learn that moving is enjoyable and have a tendency to be "earth bound" or gravitationally insecure. This refers to children who become very upset when they don't have the stability of contact with the floor.

The popular myth that auditory skills are automatically improved when the child is blind is just that, a myth.

Proprioceptive: Proprioception refers to the sensations from the receptors in the muscles and joints. This information enables the brain to know where each part of the body is and how it is moving. Proprioception is also important in the ability to motor plan, the cortical determination of the type and sequence of movements. This area is often poorly developed in the congenitally blind child. Proprioception normally develops in infancy through visual feedback as the infant explores and manipulates the environment. When adequate visual feedback is not available, this sense may not fully develop. As the child grows older and begins orientation and

mobility instruction, problems arise because the child cannot differentiate between a bent or straight arm or obtain the needed wrist action for cane travel.

Proprioception . . . is often poorly developed in the congenitally blind child.

Parental Involvement

Parents play a vital role in the early development of their visually impaired child. Part of this role includes getting the child to move, to play, to express emotion, and to be curious and to explore. Movement is a natural way to learn about their body and their environment. Overprotection only discourages a child's natural desire to explore and take risks. Bumps and scrapes are common for all children. When exploration takes place, a visually impaired child acquires basic concepts and promotes developmental progression.

The occupational therapist can also use his or her background in psychiatry to work directly with parents in learning to deal with their handicapped child. Some possible suggestions would be forming a parent support group and/or working directly with parents in their home.

Treatment Models and Suggestions

One treatment model that has proven to be effective with this population is that of sensory integration. Sensory Integration Theory focuses on the role of sensory input and how the brain processes this sensation to organize the central nervous system. Sensory integration is based on the view that if controlled sensory input especially from the vestibular system, muscles and joints (proprioceptive) and skin (tactile) is provided, the child will spontaneously form the adaptive responses that integrate those sensations. The originator of this theory, (Ayres, 1979) reports that if it looks like the child is playing, then therapy is working.

Neurodevelopmental Treatment (NDT) is another treatment model found to be useful. NDT is the inhibition of abnormal sensorimotor patterns. Treatment also promotes the prone position (a position generally disliked by blind children) which works to develop head control, stability of the shoulder girdle, and the musculature necessary to reach objects.

Rood's Neurophysiological approach says that 1) motor output is dependent upon sensory input; 2) activation of motor responses follows a normal developmental sequence; and 3) one type of stimuli helps the brain to process other types of stimuli. Rood's theory is applicable to the visually impaired population because of the direct hands-on approach. It utilizes tapping muscles bellies, joint compression, quick stretch, vibration, light touch, neutral warmth, and icing.

One treatment model that has proven to be effective with this population is that of sensory integration.

Although these three treatment models were not created for the visually impaired population they have been proven successful with it. This is due in part to the hands-on approach along with the sensory input to provide the resulting adaptive response. The most important thing to remember when doing any type of sensorimotor program is to be respectful of another's comfort level. Try the activities with the children but if he or she reacts with a great deal of discomfort and irritability, stop and try it again at a later time.

References

Ayres, A.J. *Sensory Integration and the Child*. Los Angeles: Western Psychological Services, 1979.

Hamilton. "A Physical Therapist's Comparison of the VIFTY Project Children." A report presented to the VIFTY advisory committee. Pittsburg: Western Pennsylvania School for the Blind Children, 1982.

Johnson, L. "Teaching the Visually Impaired Gifted Youngster." *Journal of Visual Impairment and Blindness*, 81.2, 1987, pp. 51-52.

Nobles. *Sensory Integration Special Interest Newsletter*. 5, 1982, pp. 189-190.

Rowland, C. "Preverbal Communication of Blind Infants and Their Mothers," *Journal of Visual Impairment and Blindness*, 78.7, 1984, pp. 297-302.

Scholl, G.T. "Visual Impairments and Other Exceptionalities," in *Foundations of Education for Blind and Visually Handicapped Children and Youth*. Ed. G.T. Scholl. New York: American Foundation for the Blind, 1986, pp. 137-144.

Silberman, R.K. and V. Sowell. "The Visually Impaired Student with Learning Disabilities: Strategies for Success in Language Arts," *Education of the Visually Handicapped*, 118.4 (Winter 1987), pp. 139-150.

Tuttle, D.W. "The Role of the Special Education Teacher-Counselor in Meeting Students' Self-Esteem Needs," *Journal of Visual Impairment and Blindness*, 81.4, 1987, pp. 156-161.

Wisconsin Act 15, May 10, 1991.

Appendixes

A. Educational Services Center
B. Resources
C. Glossary
D. Selected Bibliography
E. Resources for Career and Work
F. Sample Eye Report Form

Appendix A

Educational Services Center for Visually Impaired

Mission

The mission of the Educational Services Center is to promote an appropriate educational experience for all visually impaired children, regardless of their program placement. This mission is based upon the recognition of the following conditions:

- The residential program located at the Wisconsin School for the Visually Handicapped (WSVH) is the primary focus of expertise in education of blind and low vision children.
- The majority of visually impaired children are placed in programs located in their local school districts.
- The rural nature of Wisconsin makes it difficult for many school districts to provide specialized support services necessary to meet the unique needs of its visually impaired learners.

History

To help schools meet the needs of visually impaired learners, the Wisconsin Department of Public Instruction, through the School for the Visually Handicapped, developed outreach services in school districts to provide quality individualized educational programs.

The Educational Services Center (ESC), located on the campus of the WSVH, provides outreach services to local school districts and other local education agencies (LEAs). This program, inaugurated in 1973 as the Professional Services Center, initially functioned as a large print production facility. It quickly expanded to become a clearinghouse through which LEAs gained access to a wide range of educational materials, equipment, supplies, and services. The WSVH also began to offer outreach consultation services for programs and parents with preschool visually impaired children. Later, the school added psychological consultation and educational assessment, vocational assessment, low vision clinic, and Access to Information. In 1987, all outreach services were consolidated into one unit, the Educational Services Center. Most recently, teacher consultants for school age visually impaired and visually impaired children with multiple handicaps have been added to the ESC staff.

From its inception, the ESC has worked closely with the department's supervisor for programs for visually impaired toward the common goal of providing quality educational support services for the state's visually impaired children.

Educational Materials and Services

The production of large print and Braille textbooks for visually impaired learners is an important function of the ESC. The ESC maintains its own extensive computer data base and is able to conduct nationwide searches for specific items. Additionally, the ESC has access to the American Printing House for the Blind's computer data base for direct ordering of materials and equipment. In addition to textbooks, the ESC is constantly expanding its equipment loan program. Through this program, schools may borrow expensive equipment such as CCTV magnifiers, braillewriters and computer systems, and peripherals for use with visually impaired students. Services in this area are constantly expanding both in number of services offered and numbers of children served. Each January the ESC produces

a packet of information which is sent to Directors of Special Education, teachers of the visually impaired, and other district administrators who have visually impaired children in their programs. This packet contains up-to-date listings of materials, supplies, and equipment, as well as detailed procedures for ordering. Individuals who work with visually impaired children and wish to receive this packet of information should contact the Educational Services Center, 1700 W. State St.; Janesville, WI 53546; (608) 755-2949.

Consultation and Assessments

The ESC consulting staff consists of a core group of specialists in visual impairment and includes professionals certified in early childhood, vocational education, multi-handicapped, orientation and mobility, and elementary and secondary education. These specialists are available for telephone and on-site consultations concerning visually impaired children and may serve as members of the LEA's multidisciplinary team in the area of visual impairment. They do not, however, provide direct instructional services, nor do they have IEP responsibilities for children in LEA programs. In addition, other specialists are available through the residential program for collaboration on assessments.

Educational Assessments

The WSVH usually conducts comprehensive educational assessments that are designed to answer the LEA's and parents' questions about the visually impaired child. When this is not feasible, a team may conduct assessments at the child's home school. The evaluation or consultation focuses on the child's vision loss and how that loss affects his or her learning style. Team members seek answers to questions: Does the child have an exceptional educational need in the area of visual impairment? How has the vision loss affected academic achievement? What level of educationally useful vision does the child posses? How can functional use of vision be enhanced? What are the most appropriate instructional media, aids, materials, and techniques for this child? How does the visual impairment affect family relations, emotional development, and social interactions? How is the vision loss affecting the child's ability to travel independently and develop other independent self-care skills? In seeking answers to these and other difficult questions the team members use, or recommend a number of instruments which may be adapted, or which have been specifically developed for use with visually impaired populations.

When possible, the parents and a representative of the school district accompany the child to the evaluation setting. This procedure helps develop a mutual understanding of the child's abilities and needs as well as an opportunity for parents and school personnel to ask questions of the evaluation team. An efficiency apartment is available without charge for parents whenever overnight lodging is required.

Evaluation results and implications are compiled into a written report, and copies are provided to the referring agency or individual for dissemination to parents and school personnel. Frequently the school's M-Team uses these reports to assist in developing an appropriate IEP for the child. Follow-up interpretation and consultation is available as needed for the M-Team. Most evaluations require one day's involvement of the student. Occasionally more extensive evaluations are conducted over a period of several days in conjunction with the residential program.

To request an evaluation, a school district's special education administrator contacts the state program supervisor for the visually handicapped at the Wisconsin Department of Public Instruction or the coordinator of services to local school districts at the Wisconsin School for the Visually Handicapped. Individuals wishing to initiate a consultation may do so by calling 608-755-2950.

Early Childhood / Preschool

For the visually impaired child, the years prior to entering regular education may be critical. These years lay the foundations for all future learning and influence how the child functions later in life. The ESC's early childhood specialist helps parents develop a support system of home trainers, early childhood education programs, and other specialists; it helps all who work with the child understand how vision loss affects the child's growth and development. Upon receiving a referral, the early childhood specialist works with the state program supervisor for the visually impaired to document the child's visual impairment, and visits the child's home both to evaluate the child and to work directly with the parents. In the home, specialists demonstrate activities to stimulate the child's residual vision or to compensate for a total vision loss. Parents receive guidance in fostering appropriate goals for their child's growth and development. Parents also learn how to play an instrumental role in helping their child reach those goals Frequently, they are put in direct contact with parents of other visually impaired children or are introduced to them through participation in seminars or at the annual conference for parents of visually impaired children ages newborn to five years.

Providing a smooth transition from preschool programs to kindergarten and first grade regular school programs requires considerable planning. To help parents and school districts in this process, the WSVH holds a preschool-to-kindergarten transition assessment clinic each year. Here, in a simulated kindergarten setting, visually impaired children are assessed by a multidisciplinary team of specialists with expertise in working with blind and low vision children. The M-Team assesses each child in the areas of basic knowledge and concepts, independent travel skills, visual function or adaptive skills related to blindness, language development and social skills in relation to participation in a regular kindergarten or first grade program. Additionally, an optometrist or ophthalmologist examines each child and parents receive information and may ask questions concerning their child's eye condition. A written report is a result of the assessment, and the early childhood/preschool specialist and other staff are available to the school district and the parents to interpret the report and participate in the planning process.

Multi-handicapped Visually Impaired (MHVI)

Estimates based on the ESC's child count indicate that in excess of 50 percent of the visually impaired school age children are considered to have one or more additional handicapping conditions. Chief among these other handicaps are developmental delays and cognitive disability. Examples of other disabilities which may be handicapping are cerebral palsy, learning disabilities, orthopedic impairments, emotional disturbance, hearing impairment (deaf-blind), and a range of medical conditions. For the more severely multi-handicapped, special concern must be given to the effects of vision loss upon the child's ability to benefit from services that other disciplines offer within special education programs. The assessment instruments and instructional techniques and materials in most other disability areas rely heavily on the child's visual sense. The specialist assisting with MHVI students works closely with teachers from other disciplines, helping to develop ideas for adapting materials and approaches to meet the unique learning problems of these children. The MHVI specialist may serve on the local school district's multidisciplinary team to determine if the vision disability is handicapping and offer suggestions for appropriate programming.

School-Age Visually Impaired

The efforts of ESC's consultant for school-age visually impaired children center around helping visually impaired students who are primarily in regular classroom settings. In many school districts, these children receive little or no service specific to their identified visual handicap. The consultant's role here is to work with local teachers to help identify needs and suggest appropriate materials and equipment. In this role, the specialist may interpret physician's eye reports for those not familiar with such data, conduct assessments of functional classroom vision, serve on the local school district's multidisciplinary team to determine if the vision disability is handicapping, and offer suggestions for appropriate programming. The specialist also serves as a resource to certified teachers of the visually impaired who may have questions concerning the availability of materials, appropriateness of new techniques, materials, classroom vision aids and assessment instruments.

Orientation and Mobility

Any vision loss may affect a child's ability to travel independently. Often the need for Orientation and Mobility instruction is not known or identified for the visually impaired child. The role of the ESC's consultant in Orientation and Mobility (O&M) is to provide consultation for visually impaired children in the local school program. The consultant's role is to work with the LEA to help identify needs and suggest appropriate techniques and equipment for educating the visually impaired child in orientation and mobility. The O&M consultant may work with the teacher of the visually impaired to conduct functional vision assessments as they relate to independent travel. The consultant will provide training for individuals and groups involved in programs serving visually impaired. The O&M specialist also serves the role of a resource to certified O&M instructors who may have questions regarding materials, techniques, and assessment instruments.

Work Experience Consultation and Assessment

The vocational outreach consultant helps LEAs provide a wide range of work experiences for each visually impaired student. The goal of these activities is to enable that student to participate in meaningful adult work. These adult activities may be related to competitive employment, participation in a sheltered work environment, or further educational experiences. These experiences include activities associated with safe and efficient travel, self-care skills, social skills development, and avocational interests. All of these are necessary for a personally satisfying and meaningful adult life.

Work experience selection is a process that occurs over a span of years. It is anticipated that the vocational consultant will have a number of contacts with any one student over that span of time The process includes activities related to prevocational experiences such as developing an awareness of occupations and work habits. It also involves assessment data-gathering activities, including specific evaluations using a battery of adapted instruments. And lastly, it involves vocationally-oriented counseling and work experiences. Since this process does not usually terminate during the school years, part of the services offered focus on providing for transition into post- high school activities or other service delivery systems such as the Wisconsin Department of Vocational Rehabilitation or other social services agency.

In order to receive federal funds for vocational and technical education, school districts must certify that they offer comprehensive services for handicapped children. The vocational specialist is available to help school districts meet this criteria regarding visually impaired students.

In addition to providing consultation and assessment services, the vocational specialist organizes and participates in a number of group activities with visually impaired youth. He or she actively promotes student involvement in career camps, job seeking skills seminars, and Job Training Partnership Act experiences.

Low Vision Clinics

Approximately 70 percent of the identified visually impaired children in school programs are print readers. That is, with appropriate vision aids or adaptations to materials, these children use print as their primary educational media. Many others also can be helped by low vision aids for travel with a high degree of independence. Many accomplish specific tasks related to their self- care and selected occupational and avocational interests.

Outreach low vision clinics are a cooperative effort of WSVH staff from the health center, ESC, WSVH faculty, UW-Madison University Clinics, and the state program supervisor for visually handicapped. The team typically is composed of a nurse, an ophthalmologist or optometrist, a low vision specialist, a teacher of vision impaired, and an orientation and mobility specialist. The make-up of the team provides an opportunity to assess the child's visual condition from a number of viewpoints and furnishes both the parents and the school district with ample opportunity to develop an understanding of the visual impairment. The clinics are held in approximately six different sites each school year. The site locations are determined by need and convenience to the greatest number of clients. All referrals are made through the Department of Public Instruction's state program supervisor for visually handicapped, Madison, Wisconsin.

Access to Information

Through the Access to Information program, a constantly updated selection of written, film, cassette, and video materials about visual impairments and educating visually impaired children are available without charge to educators in schools throughout Wisconsin. Interested educators may select from over a hundred items compiled by the WSVH staff. In those instances where a particular topic may not be covered in the current listing, a search of the topic will be made by the ESC/WSVH staff.

To secure a current listing of items available through the Access to Information program or to get further information regarding any of the services of the Educational Services Center for the Visually Handicapped, contact:

The Educational Services Center
Wisconsin School for the Visually Handicapped
1700 W. State St.
Janesville, WI 53546
Telephone (608) 755-2950
1-(800)-832-9784
Fax 1-(608)-755-2211
or
State Program Supervisor for the Visually Handicapped
Division for Handicapped Children and Pupil Services
Department of Public Instruction
P.O. Box 7841
Madison, WI 53707-7841
Telephone (608) 266-3522

Adapted Reading Materials and Educational Aids

American Brotherhood for the Blind
18440 Oxnard Street
Tarzana, CA 91356
(818) 343-2022
twin vision books

American Printing House for the Blind
P.O. Box 6085
1839 Frankfort Avenue
Louisville, KY 40206
(502) 895-2405
produces and distributes large print and braille materials, educational aids, and adapted equipment

Exceptional Teaching Aids
20102 Woodbine Avenue
Castro Valley, CA 94546
(415) 582-4859
distributes Mangold materials

Howe Press
Perkins School for the Blind
175 North Beacon Street
Watertown, MA 02172
(617) 924-3490
manufactures braillewriters, slates, and styli

Library Reproduction Service
1977 South Los Angeles Street
Los Angeles, CA 90011
(213) 749-2463
distributes large print materials

National Association for Visually Handicapped, Inc
22 W. 21st Street
New York, NY 10010
(212) 889-3141
produces large print materials

Recording for the Blind
20 Rozel Road
Princeton, NJ 08540
(609) 452-0606
manufactures and distributes taped recorded books

SAVI-Science Activities for Visually Impaired
Center for Multi-Sensory Learning
University of California-Berkeley
Berkeley, CA 94720
(415) 642-8941
produces science materials

Telesonsory Systems
P.O. Box 7455
Mountain View, CA 94039-9951
(800) 227-8418
distributes Optacon II

Volunteer Braillists, Inc
201 South Gammon Road
Room 509-S
Madison,WI 53717
(608) 233-0222
produces braille and taped materials

Volunteer Textbook Recording and Transcribing Service
814 West Wisconsin Avenue
Milwaukee, WI 53233
(414) 278-3039
produces braille and taped materials

Wisconsin Regional Library for the Blind and Physically Handicapped
813 West Wells
Milwaukee, WI 53233
(414) 278-3045
a regional lending library; distributes large print, braille, tape-recorded books, and players

Wisconsin School for the Visually Handicapped and Educational Resources Center for the Visually *Impaired*
1700 West State Street
Janesville, WI 53546
(800) 832-9784
provides assessment, materials, information and instruction

Xerox-Kurzweil Personal Reader
Xerox Imaging System
9 Centennial Park Drive
Peabody, MA 01960
(800) 343-0311
provides Kurzweil Personal Reader

Low Vision Aids Assessment and Training Materials

Allied Educational Publishing Co.
P.O. Box 337
Niles, MI 49120
(800) 348-2225
distributes the Fitzhugh Plus Program

Bernell Corporation
750 Lincolnway East
South Bend, IN 46618
(800) 348-2225
distributes a wide variety of vision tests and training equipment

Curriculum Associates, Inc
5 Esquire Road
North Bellerica, MA 01862
(508) 667-8000
distributes testing and educational materials

DLM (Developmental Learning Materials) Teaching Resources
One DLM Park
Box 4000
Allen, TX 75002
(800) 527-4747
distributes a wide variety of materials useful for visual efficiency training

Electrix
369 Ludow Street
Stamford, CT 06902
(203) 776-5577
Manufactures reading lamps

Herco Lamp Company
Box 608
Wallingford, CT 06492
(203) 269-7735
Manufactures reading lamps

The Lighthouse Optical Aids Service
3602 Northern Boulevard
Long Island City, NY 11101
(212) 937-9338, (718) 937-6959
distributes various low vision aids, vision tests

Luxo Lamp
36 Midland Avenue
Port Chester, NY 10573
(914) 937-4434
manufactures reading lamps

New York Lighthouse Low Vision Service
111 East 59th Street
New York, NY 10022
distributes low vision aids and vision testing materials

Pennsylvania College of Optometry
1200 West Godfrey Avenue
Philadelphia, PA 19141
distributes testing materials

Publishers Test Service
2500 Garden Road
Monterey, CA 93940
(408) 649-8400
distributes Frostig materials

Reader Enterprise
193 Robinson Street
Binghamton, NY 13904
manufactures reading stand

Stoelting
1350 South Kostner Avenue
Chicago, IL 60623-1196
(312) 522-4500
distributes testing materials

Tensor
333 Stanley Avenue
Brooklyn, NY 11236
(212) 649-2000
manufactures lamps

Weir Enterprises
Box 365
Santa Clara, CA 95052
(408) 296-0378
manufactures reading stand

Wisconsin Council of the Blind
354 West Main Street
Madison, WI 53703
(608) 255-1166
distributes a wide variety of living and low vision aids

Living and Domestic Aids

Badger Association for the Blind
912 North Hawley Road
Milwaukee, WI 53213
(414) 258-9200
distributes a wide variety of living and low vision aids

Independent Living Aids
27 East Mall
Plainview, NY 11803
(516) 752-8080
distributes a wide variety of living aids

MaxiAids
42 Executive Boulevard
Farmingdale, NY 11735
(516) 752-0521
distributes a wide variety of living aids

LS&S Group
Box 673
Northbrook, IL 60065
(800) 468-4789
distributes a wide variety of living aids

Sense-Sations
Associated Services for the Blind
919 Walnut Street
Philadelphia, PA 19107
(215) 627-0600
distributes a wide variety of living aids

Science Products
Box 88
Southeastern, PA 19399
(800) 888-7400
distributes a wide variety of living aids

Trian Corporation
177 Telegraph Road
Suite 302
Bellingham, WA 98226
(800) 628-2828
distributes a wide variety of living aids

Visions
Services for the Blind and Visually Impaired
817 Broadway, 11th floor
New York, NY 10003
(212) 477-3800
provides information and aids to independent living-brochure available upon request

Wisconsin Council of the Blind
354 West Main Street
Madison, WI 53703
(608) 255-1166
distributes a wide variety of living and low vision aids

Physical Education, Health, Recreation, Therapy, and Creative Arts

American Alliance for Health, Physical Education, Recreation and Dance
1900 Association Drive
Reston, VA 22091
(703) 476-3400
produces health, physical education, recreation and dance materials

American Dance Therapy Association
Suite 108, 2000 Century Plaza
Columbia, MD 21044
(301) 997-4040
a professional organization

American Physical Therapy Association
1111 N. Fairfax Street, N. W.
Alexandria, VA 22314
(703) 684-2782
a professional organization

Blind Outdoor Leisure Development
533 East Main Street
Aspen, Co 81611
(303) 925-8922
an organization providing recreational programs for blind and visually impaired

Boy Scouts of America, Scouting for the Handicapped
1325 West Walnut Hill Lane
PO 152079
Irving, TX 75015-2079
(214) 580-2000
an organization providing programs for blind and visually impaired

Girl Scouts of the U.S.A.
Programs for Special Populations
830 Third Avenue
New York, NY 10022
(212) 940-7500
an organization providing programs for blind and visually impaired

Ski for Light
1455 West Lake Street
Minneapolis, MN 55408
(612) 827-3232
an organization providing skiing programs for blind and visually impaired

United States Association for Blind Athletes
(USABA)
55 West California Avenue
Beach Haven Park, NJ 08008
(609) 492-1017
an organization providing competition for blind and visually impaired

Very Special Arts Wisconsin
1955 West Broadway, Suite 101
Madison, WI 53713
(608) 223-0661
supports art endeavors for handicapped persons

Wisconsin Arts Board
131 West Wilson Street
Suite 301
Madison, WI 53702
(608) 266-0190
provides a wide variety of information and services related to the arts

Wisconsin Lions Camp
46 County A
Rosholt, Wisconsin 54473
(715) 677-4761
maintains a recreational summer camp program for visually impaired

Vocational

Division of Vocational Rehabilitation
1 West Wilson Street, Room 850
Madison, WI 53707
(608) 266-5600
provides rehabilitative services

Foresight
The Greater Detroit Society for the Blind
16625 Grand River Avenue
Detroit, MI 48227
(313) 272-3900
provides information on employment opportunities

Hadley School for the Blind
700 Elm Street
Box 299
Winnetka, IL 60093
(800) 323-4238
provides correspondence courses for the blind

Industries for the Blind
3220 West Vliet Street
Milwaukee, WI 53208
(414) 933-4319
provides information on employment opportunities

Job Opportunities for the Blind
1800 Johnson Street
Baltimore, MD 21230
(800) 638-7518
provides information on employment opportunities

Milwaukee Area Technical College
Department for the Visually Impaired
700 W. State Street
Milwaukee, WI 53203
(414) 278-6938
provides pre-vocational skills training

Northcentral Technical Institute
Program for the Visually Impaired
1000 Campus Drive
Wausau, WI 54401
(715) 675-3331
provides pre-vocational skills training

Rehabilitation Research and Training Center for the Blind and Low Vision
Missisippi State University
Drawer 6189
Mississippi State, MS 39762
(601) 325-200l
distributes testing materials

WIS-CRAFT
5316 West State Street
Milwaukee, WI 53203
(414) 775-5800
provides information on employment opportunities

Electronic Equipment

Access Unlimited
3535 Briar Park Suite 102
Houston, TX 77042
(713) 781-7441

BIT, Products That Talk
New Product Toll Free Hotline
1-800-BIT-TALK

Closing the Gap
107 N. 8th Street
Henderson, MN 56044
(612) 341-8299
provides computer technology for physically disabled

HumanWare Inc
6245 King Road
Suite P
Loomis, CA 95650
(916) 652-7253
manufactures CCTV

IBM Support Center for Persons With Disabilities
PO Box 2150
Atlanta, GA 30301-2150
(800) 426-2133 or (416) 474-3200
distributor of adaptive equipment for IBMs and IBM compatibles

Kurzweil Computer Products
A Xerox Company
Personal Reader Company
185 Albany Street
Cambridge, MA 02139
(800) 343-0311
manufactures the Kurzwiel Personal Reader

MicroTalk
337 South Peterson Avenue
Louisville, KY 40206
(502) 896-1288
produces programs for Apple computers and publishes a magazine for blind Apple users, maintains a library of shareware programs

Optelic
P.O. Box 729
Westford, MA 01886
(508) 772-3395
sources of CCTVs

Overseer Electronic Visual Aids
6826 Logan Ave. South
Richfield, MN 55423
(612) 866-7606
sources of CCTVs

PC Lens
Arts Computer Products, Inc.
121 Peach Street
Suite 400
Boston, MA 02111
(617) 482-8248
distributes large print computer access devices

Pelco
300 West Pontiac Way
Clovis, CA 93612
(800) 421-1146, In CA (800) 537-1991
sources of CCTVs

RC Systems, Inc
121 West Winesap Road
Bothell, WA 98012
(206) 672-6909
distributes BEX system for Apple computers

Raised Dot Computing
408 S. Baldwin Street
Madison, WI 53703
(608) 257-9595
provides computer technology for visually impaired

Tagarno of America, Inc
615 Otis Dr
PO Box 761
Dover, DE 19903
(302) 734-9630
sources of CCTVs

Talking and Visual Aids
8136 Appoline
Detroit, MI 48228
(313) 935-1266
sources of CCTVs

TSI Midwest
10926 South Western Avenue
Chicago, IL 60643
(312) 881-8581
manufactures CCTVs, Optacon, VersaBraille

Tojek and Associates
17355 Mierow Lane
Brookfield, WI 53005
(414) 784-4979
manufactures CCTVs

ZoomText
AI Squared
1463 Hearst Drive
Atlanta, GA 30319
(404) 233-7065
distributes large print computer access devices

Assessment Materials

American Guidance Service
4201 Woodland Road
Circle Pines, MN 55014-1796
(612) 786-4343
distributes testing materials

Curriculum Associates, Inc
5 Esquire Road
North Bellerica, MA 01862-2589
(508) 667-8000
distributes testing and educational materials

DLM (Developmental Learning Materials) Teaching Resources
One DLM Park
Box 4000
Allen, TX 75002
(800) 527-4747
distributes a wide variety of materials useful for visual efficiency training

Harcort, Brace & World, Inc
6277 Sea Harbor Drive
Orlando, FL 32821
(800) 346-8648
distributes testing materials

Psychological Corporation
555 Academic Court
San Antonio, TX 78204
(512) 299-1061
distributes testing materials

Publishers Test Service
2500 Garden Road
Monterey, CA 93940
(408) 649-8400
distributes Frostig materials

Stoelting
620 Wheat Lane
Wood Dale, IL 60191
(708) 860-9700
distributes testing materials

State and National Organizations Serving the Visually Impaired

American Foundation for the Blind
15 West 16th Street
New York, NY 10011
(212) 620-2000
clearinghouse for information related to blindness

American Council of the Blind Inc.
1010 Vermont Avenue N.W.
Suite 1100
Washington, DC 20005
(202) 393-3666
information clearinghouse on topics related to blindness

American Council of the Blind Parents
1010 Vermont Avenue N.W. Suite 1100
Washington, DC 20005
(202) 393-3666
support group for parents of visually impaired

Association for Education and Rehabilitation of the Blind and Visually Impaired (AER)—Wisconsin Chapter
206 North Washington Street, Room 320
Alexandria, VA 22314
(703) 836-6060
a professional organization of persons who work with the blind—contact national organization for information on the chapter

The Council for Exceptional Children
Division of the Visually Handicapped
1920 Association Drive
Reston, VA 22091
(703) 620-3660
a professional organization of persons who work with the blind and other handicapped individuals—contact national organization for information on the chapter

Curative Workshop
10001 N. 92nd Street
Wauwatosa, WI 53226
(414) 259-1414
low vision clinic

Gunderson Clinic
1836 South Ave
La Crosse,WI 54601
(608) 782-7300
low vision clinic

Knights Templar, Grand Encampment
14 East Jackson Boulevard
Suite 1700
Chicago,IL 60604
(312) 427-5670
pays for eye treatment, surgery, and hospitalization for the needy

Lions Club International
300 22nd Street
Oak Brook, IL 60570
(312) 571-5466
a philanthropic organization

National Association of Parents of the Visually Impaired, Inc. (NAPVI)
2180 Linway Drive
Beloit, WI 53511
(608) 362-1380
support group for parents—contact national organization for information on WI chapter

National Federation of the Blind
1800 Johnson Street
Baltimore, MD 21230
(301) 659-9314
a national organization of blind and visually impaired persons—contact national organization for information on the chapter

New Eyes for the Needy
Box 332
549 Milburn Avenue
Short Hills, NJ 07078
(201) 376-4903
provides eyeglasses for those who cannot afford to buy them

Parent Care
c/o Sandy Garrand
University of Utah Medical Center
50 North Medical Drive, Suite 2A210
Salt Lake City, UT 84132
(801) 581-2121
parent organization

Parenting Premies
PO Box 530
Stevens Point, WI 54481
(715) 824-2596
parent newsletter

University of Wisconsin
Low Vision Clinic
2880 University Ave.
Madison, WI 53705
(608) 263-7171
low vision clinic

Glossary

Accommodation: the ability of the eye to see clearly at different distances by changing the lens curvature.

Acuity: clearness or sharpness of vision.

Adventitious blindness: disability occurring after birth.

Binocular vision: the simultaneous use of vision in both eyes.

Central visual acuity: ability of the macula of the eye to separate details of images brought to focus upon it.

Central visual fields: central vision, perception of objects, color, or motion by macula.

Closed Circuit television (CCTV): an electronic magnifier that uses a television screen and a camera to project enlarged print.

Congential: present at birth or shortly after.

Continental method: holding knife in dominant hand and fork in other to eat. The need to switch utensils from hand to hand does not exist.

Convergence: the ability of the two eyes to bring their visual axes to focus on a near object; to cross or turn the eyes inward.

Criterion references tests: an approach to testing based on the comparison of a subject's performance with an established standard or criterion.

Divergence: the ability of the two eyes to bring their visual axes away from a near object and focus on one more remote.

Dycem: a mat designed to help keep objects in a stationary position on the table top.

Focal distance: the distance that a person must hold a magnifier from the material being viewed to obtain the clearest image.

Fovea: small depression on the retina; the part of the macula adapted for the clearest vision.

Functional low vision evaluation: comprehensive assessment of a visually impaired person's visual impairment, visual potentials, and capabilities.

Functional vision: relates to the total act of seeing and using sight to function in a variety of settings and activities.

Fusion: an ability of the brain to perceive as one image the two dissimilar images seen by each eye.

Glare: quality of light that causes discomfort in the eye.

Individualized Education Plan (IEP): the written statements of objectives and procedures for a handicapped child to be implemented in accordance with the requirements of the federal law.

Itinerant teacher: a teacher with special training in a specific area of special education who travels from school to school and provides specialized instruction and consultation to teachers. Usually serves many students in many districts.

Kurzweill Personal Reader: an optical scanner that reads typeset and typewritten material and turns them into synthetic speech.

Light perception: lowest level of acuity based on patient's ability to distinguish light from dark. Used when vision loss is profound.

Macula: small area of the retina that surrounds the fovea and which, with the fovea, comprises the area of distinct vision.

Magnifier: a lens or a set of lenses that increase the size of the retinal image.

Large print or type: print larger than type commonly found in magazines, newspapers, and books, generally larger than 14 point (3/16 of an inch).

Low vision: partial sight or subnormal vision which nevertheless allows vision to be used as a primary channel for learning or receiving information.

Low vision aids: optical devices of various types, such as magnifiers, monoculars, lenses, hand held telescopes or prism lenses which are useful to people with visual impairments.

Low vision clinic: facility that gives eye examinations, provides low vision assessments, prescribes low vision aids, and offers instructions on how to use the aids.

Monocular: see telescope

Multidisciplinary Team (M-Team): a group of at least two professionals appointed to determine if a student has exceptional educational needs (EEN); one member must be certified and licensed in area(s) of suspected EEN.

Norm referenced tests: an approach to testing based on comparison of one subject's performance with other's performance on the same test.

Ocular motility: relates to the use of the eye muscles and their effect on eye movements.

Optacon: a reading device, used by blind persons, which electronically converts print letters to tactile images.

Orientation and mobility: use of the senses to establish one's location and move safely through to environment. Most blind and visually impaired individuals require special training in this area.

Partially sighted: visual acuity that may range from 20/70 to 20/200 in the better eye with correction.

Peripheral visual field: side vision, perception of objects, motion, or color by any part of the retina, excluding the macula.

Photophobia: abnormal sensitivity of the eye to exposure of light.

Reading stand: device that supports regular or large print books and allows the reader to change positions.

Refraction: the physical property by which a ray of light is deflected from its course as it passes from one medium to another of a different optical density; the determination of the refractive errors of the eye and their correction by prescription of lenses.

Refractive error: defect in the eye that prevents light rays from being brought to a single focus on the retina.

Retina: innermost coating of the eye, containing light sensitive nerve cells and fibers.

Telescope: a device that uses two lens to provide angular magnification for objects that are a relativity long distance (usually greater than 20 feet) from the observer.

Typoscope: a reading aide made by cutting a slot in black construction paper and using it to isolate one part of a line being read from other other words on the page.

Visual acuity (acuteness): sharpness of vision in respect to the ability to resolve detail.

Visual closure: the ability to identify a familiar object from an incomplete visual presentation.

Visual efficiency: level of visual function.

Visual fields: see central visual field, peripheral visual fields.

Visual figure/ground differentation: the ability to identify a figure that stands out in good contour and an indistinct homogeneous ground.

Appendix D

Selected Bibliography

Awad, M. and J. Wise. "Mainstreaming Visually Handicapped Students in Mathematics Classes." *Mathematics Teacher* 77.6 (September 1984), pp. 438-441.

Bauman, M.K. and C.A. Kropf. "Psychological Tests Used with Blind and Visually Handicapped Persons." *School Psychology Digest* 8.3 (Summer 1979), pp. 257-270.

Bina, M.J. "Social Skills Development Through Cooperative Group Learning Strategies," *Education of the Visually Handicapped*, 18.1 (September 1986), pp. 27-40.

Brayley, W.T., G. Konicki, and C. Leedy. *Daily Sensorimotor Training Activities*. New York: Educational Activities, 1968.

Canter, P., B. Hatlen, and M. Cale. *Beyond TV Dinners: Three Levels of Recipes for Visually Handicapped Cooks*. San Pablo, CA: Living Skills Center for the Visually Handicapped.

Cassin, B. and S. Solomon. *Dictionary of Eye Terminology*. Gainsville, FL: Triad Publications, 1984.

Chase, J.B. "Application of Assessment Techniques to the Totally Blind." In *Psychoeducational Evaluation of Children and Adolescents with Low-Incidence Handicaps*. Eds. P.J. Lazarus and S. S. Strichard. Orlando, FL: Greene and Stratton, 1986. 75-102.

Clayton, I. "Career Preparation and the Visually Handicapped Student," *Education of the Visually Handicapped*. 14.4 (1983), pp. 115- 120.

Connolly, A., W. Nachtman, and E.M. Pritchett. "Psychoeducational Assessment of Visually-impaired Learners," in *Psychoeducational Evaluation of Children and Adolescents with Low-Incidence Handicaps*. Eds. P.J. Lazarus and S. S. Strichart. New York: Harcourt Brace Jovanovich, Publishers, 1986. 41-74.

Corbett, M. *Readings in Orientation and Mobility*. Chicago, IL: Stoelting Co., May 1980.

Corey, D. and N. Neustadt-Noy. "A New Approach to Recreational Rehabilitation." *Journal of Visual Impairment and Blindness* 82.5 (May, 1988), pp. 195-196.

Corn, A.L. and I. Martinez. *When You Have a Visually Handicapped Child in Your Classroom: Suggestions for Teachers*. New York: American Foundation for the Blind, 1977.

Cotten, P.D. and J.P. Wade. "A Demonstration Work Activities Center for Multiply Handicapped, Visually Impaired Persons," *Journal of Visual Impairment and Blindness* 78.7 (September 1984), pp. 303-306.

Cruickshank, W., ed. *Psychology of Exceptional Children*. Englewood Cliffs, NJ: Prentice Hall, 1908.

Cunningham, D. "Educating the Visually Impaired, Severely to Profoundly Retarded Child: A Long-Range Perspective." *Education of the Visually Handicapped* 15.3 (1983), pp. 95-99.

DeLucchi, L., L. Malone, and M.R. Olson. "Curricular Adaptations: Science" In *Foundation of Education for Blind and Visually Handicapped Children and Youth*. Ed. G. T. Scholl. New York: American Foundation for the Blind, 1986. 375-381.

DePauw, K.P. "Physical Education for the Visually Impaired: A Review of the Literature." *Journal of Visual Impairment and Blindness* 75.4 (1981), pp. 162-164.

Dodson-Burk, B. and E.W. Hill. *Orientation and Mobility Primer for Families and Young Children*. New York: American Foundation for the Blind, 1989.

Doyle, D. "Ballet for Visually Handicapped Students." *Journal of Physical Education, Recreation, and Dance* (1981), pp.25-29.

Drouillard, R. and S. Raynor. *Move It: A Guide for Helping Visually Impaired Children Grow*. Washington, DC: AAHPER Publications, 1977.

Efron, M. *Who is the Visually Impaired Child*? Mavis Sourcebook 1. Boulder, CO: Project Mavis, Social Studies Consortium, Inc. 1979.

Erhardt, R.P. "Visual Function in the Student with Multiple Handicaps: An Integrative Transdisciplinary Model for Assessment and Intervention." *Education of the Visually Handicapped* 19.3 (Fall 1987), pp. 87-98.

Erin, J.N. "Frequencies and Types of Questions in the Language of Visually Impaired Children" *Journal of Visual Impairment and Blindness* 80. 4 (April 1986), pp. 670-674.

_____. "Teachers of the Visually Handicapped: How Can They Best Serve Children with Profound Handicaps?" *Education of the Visually Handicapped* 18.1 (Spring 1986), pp. 15-25.

Feld, G.F. and C.C. Hall. "The CCTV as an Art Tool." *Journal of Visual Impairment and Blindness* 74.4 (April, 1980), pp. 151- 153.

Ferrell, K.A. *Reach Out and Teach—Meeting the Training Needs of Parents of Visually and Multiply Handicapped Young Children*. New York: American Foundation for the Blind, 1985.

Fessenden, P.K. "Visual Impairments." In *Puzzled about Educating Special Need Students? A Handbook on Modifying Vocational Curricula for Handicapped Students*. Madison: University of Wisconsin-Madison, Wisconsin Vocational Studies Center, 1980.

Fewell, R.R. "New Directions in the Assessment of Young Handicapped Children." In *Assessment and Programming for Young Children with Low-Incidcent Handicaps*. Eds. C.E. Reynods and J.H. Clark. New York: Plenum Press, 1983.

Foundation of Education for Blind and Visually Handicapped Children and Youth. Ed. G.T. Scholl. New York: American Foundation for the Blind, 1986.

Fullwood, D. *A Start to Independence for Your Visually Impaired Child*. Burwood, Victoria: Burwood Educational Centre for Blind Children, 1984.

Gaver, W. *A Five County Vocational Skills Training Program for the Blind*. Santa Cruz, CA: Office of Education, 1972.

Gokey, M. *Sitting Positions and Active Positions*. Janesville: Wisconsin School for the Visually Handicapped, 1989.

Gold, Julia H., Robin W. Adler, and Shelley F. Jones. *Travel Tales: A Mobility Storybook*. Bethel, PA: Mostly Mobility, 1988.

A Guide to Curriculum Planning in Agriculture Education. Madison: Wisconsin Department of Public Instruction, 1988.

A Guide to Curriculum Planning in Business Education. Madison: Wisconsin Department of Public Instruction, 1987.

A Guide to Curriculum Planning in Dance. Madison: Wisconsin Department of Public Instruction, 1988.

A Guide to Curriculum Planning in Health Education. Madison: Wisconsin Department of Public Instruction, 1985.

A Guide to Curriculum Planning in Home Economics. Madison: Wisconsin Department of Public Instruction, 1987.

A Guide to Curriculum Planning in Language Arts. Madison: Wisconsin Department of Public Instruction, 1986.

A Guide to Curriculum Planning in Mathematics. Madison: Wisconsin Department of Public Instruction, 1987.

A Guide to Curriculum Planning in Physcial Education. Madison: Wisconsin Department of Public Instruction, 1985.

A Guide to Curriculum Planning in Science. Madison: Wisconsin Department of Public Instruction, 1987.

A Guide to Curriculum Planning in Technology Education. Madison: Wisconsin Department of Public Instruction, 1988.

Harley, L. *Visual Impairment in the Schools*. Springfield, IL: Charles C. Thomas, 1984.

Harley, Randall K., Rebecca F. DeBose, and Stanley E. Bourgeault. *Reading in Orientation and Mobility*. Chicago: Stoelting Co. 1980.

Harrell, L.J. *From Crib to Kindergarten.* Variety Club Blind Babies Foundation: ERIC Document Reproduction Service, 1083.

Hartmen, R. E. "Ball Games for the Visually Handicapped Children." *New Outlook for the Blind* 68.6 (1974), pp. 348-355.

Hastings, J. R. *Industrial Arts Instruction for Visually Impaired Children and Youth.* St. Louis, MO: American Association of Instructors of the Blind, 1961.

Hatlen, P.H. *Important Concerns in the Education of Visually Impaired Children*: Mavis Sourcebook 5. Boulder, CO: Project Mavis, Social Science Consortium, Inc., 1979.

Hatlen, P.H. and S.A. Curry. "In Support of Specialized Programs for Blind and Visually Impaired Children: The Impact of Vision Loss on Learning." *Journal of Visual Impairment & Blindness* 81.1 (January 1987), pp. 7-13.

Houser, L., E., Moses, and J.K. Kay. "A Family Orientation to Transition." *Education of the Visually Handicapped* 19.3 (Fall 1987), pp. 109-119.

Hall, A., et al, eds. *Identifying Developmental Patterns of Normal and High Risk Visually Impaired Infants: Development of an Assessment Protocol.* Berkely: University of California, June 1984. ERIC Document No. ED254 054.

Jacobson, W. *Providing Orientation and Mobility Instruction in Public School Progress: Helpful Hints for the Regular and Vision Teacher.* New York: Paper presented at the Annual International Convention of the Council for Exceptional Children. ERIC Document Number ED 204 955, 1981.

_____. *Rehabilitation Technology for the Blind in the United States.* Little Rock: University of Arkansas at Little Rock, Department of Rehabilitation and Special Education, 1984. ERIC Document No. ED 248 674.

Jaeger, L. *Home Program Instruction Sheets for Infants and Young Children.* Tucson, AZ: Therapy Skill Builders, 1987.

Janowski, L.W. and J.K. Evans. "The Exercise Capacity of Blind Children." *Journal of Visual Impairment and Blindness* 75.6 (June 1981), pp. 248-251.

Jastrzembska, Z.N. "Resources for Parents and Professionals Working with Visually Handicapped Preschoolers." *Education of the Visually Handicappped* 16.3 (Fall 1984), pp. 115-134.

Jones, N.T., ed. *Art and the Handicapped.* Richmond, VA: ERIC Document Reproduction Service, No. ED233 508.

Jones, Sally. *Preprimer Cooking or Cooking Techniques for the Blind.* Louisville, KY: American Printing House, 1973.

Jose, Randall. *Understanding Low Vision.* New York: American Foundation for the Blind, 1983.

Kastein, S., I., Spaulding, and B. Scharf. *Raising the Young Blind Child: A Guide for Parents and Educators*. New York: Human Sciences Press, 1980.

Kekelis, L. *Talk to Me*. Los Angeles: The Blind Childrens' Center, 1984.

_____. *Talk to Me, II*. Los Angeles: The Blind Childrens' Center, 1985.

Kelley, J.D., ed. *Recreation Programming for Visually Impaired Children and Youth*. New York: American Foundation for the Blind, 1981.

Kersten, F. "Music as Therapy for the Visually Impaired." *Music Educators Journal* 67.7 (March 1981), pp. 63-65.

Kroft, Diane. *A Second Beginner's Guide to Personal Computers for the Blind and Visually Impaired*, 2nd ed. Boston: National Braille Press, 1987.

Langley, M.B. "Psychoeducational Assessment of the Multihandicapped Blind Child: Issues and Methods." *Education of the Visually Handicapped*, 10.4 (Winter 1979), pp. 97-103.

Leary, B. and M. von Schneden. *"Simon Says" is not the Only Game*. New York: American Federation for the Blind, 1982.

Lombana, J.H. *Success for Students with Visual or Hearing Impairments: Sources to Upgrade Career Counseling and Employment of Special Students*. Tallahassee, FL: Division of Vocational Education, 1982. ERIC Document No. ED 232 034.

Lowenfeld, B., Abel and Hatlen. *Blind Children Learn to Read*. Springfield, IL: Charles C. Thomas, 1969.

Lowenfeld, B. *The Visually Handicapped Child in School*. New York: The John Day Company, 1973.

Luiselli, J.K. "Positive Reinforcement Interventions in the Classroom." *Journal of Visual Impairment and Blindness* 82.1 (January 1988), pp. 17-20.

Lydon, W.T. and M.L. McGraw. *Concept Development for Visually Handicapped Children*, rev. ed. New York: American Foundation for the Blind, Inc., 1973.

Malcomson, B. "Opening Our Eyes." *The Gifted Child Today* (1988), pp. 2-6.

Mangold, S.S. and L.J. Roessing. "Instructional Needs of Students with Low Vision." In *A Teachers' Guide to the Special Educational Needs of Blind and Visually Handicapped Children*. Ed. S.S. Mangold. New York: American Foundation for the Blind, Inc., 1983.

Mann, J.W. and M. Peterson. *Transition for High School to Post-Secondary Programs for Blind and Visually Impaired Adolescents*. Paper presented at the Annual Conference of the Mid-South Educational Research Association, 1985. ERIC Document No. ED 268 747.

Martin, G.J. and M. Hoben. *Supporting Visually Impaired Students in the Mainstream.* Minneapolis, MN: Leadership Training Institute/Reston, VA: Council for Exceptional Children, 1977.

Matsuda, M.M. "A Comparative Analysis of Blind and Sighted Children's Communication Skills." *Journal of Visual Impairment and Blindness* 78.1 (January 1984), pp. 1-5.

McGinnis, A.R. "Functional Linguistic Strategies of Blind Children." *Journal of Visual Impairment and Blindness* 75.5 (May 1981), pp. 210-214.

Meacham, F.R., M.M. Kline, and J.A. Stovall. "Adaptive Behavior and Low Incidence Handicaps: Hearing and Visual Impairments." *The Journal of Special Education* 21.1 (Spring 1987), pp. 183-196.

Montgomery, P. and E. Richter. *Sensorimotor Integration for Developmentally Disabled Children: A Handbook.* Los Angeles: Western Psychological Services, 1977.

MontiCivelli, E. "Verbalism in Young Blind Children." *Journal of Visual Impairment and Blindness* 77.2 (1983), pp. 61-63.

Moore, S. *Beginnings: A Practical Guide for Parents and Teachers of Visually Impaired Babies.* Louisville, KY: American Printing House for the Blind, Inc., 1985.

Morris, J.W. "Curricular Adaptations: Social Studies." In *Foundations of Education for Blind and Visually Handicapped Children and Youth.* Ed. G. T. Scholl. New York: American Foundation for the Blind, Inc., 1986. 363-367.

Napier, G. "Special Subject Adjustments and Skills: Mathematics," In *Foundations of Education for Blind and Visually Handicapped Children and Youth.* Ed. G.T. Scholl. New York: The John Day Company, 1973. 221-277.

_____. "Special Subject Adjustments and Skills: Sciences." In *The Visually Handicapped Child in School.* Ed. B. Lowenfeld. New York: The John Day Company, 1973.

Offenberger, D.M. "Science for Jann: A Blind Pupil in a Sighted Class." *Journal of Visual Impairment and Blindness* 75.1 (1981), pp. 13-16.

Olson, M.R. *Guidelines and Games for Teaching Efficient Braille Reading.* New York: American Foundation for the Blind, 1987.

The Oregon Project for Visually Impaired and Blind Preschool Children. Medford, OR: Jackson County Education Service District.

Palazesi, M.A. "The Need for Motor Development Programs for Visually Impaired Preschoolers." *Journal of Visual Impairment and Blindness* 80.2 (February 1986), pp. 573-576.

Papineau, A. *The Mainstreamed Visually Handicapped: References and Resources.* Madison: Wisconsin Department of Public Instruction.

Peterson, M. *Vocational Assessment of the Visually Impaired*. MS: Mississippi State University, Research and Braining Center in Blindness and Low Vision, 1982. ERIC Document Number ED 224 987.

Piaget, J. *The Origins of Intelligence in Children*. Trans. M. Cook. New York: International Universities Press, 1952.

Poole, Vicki A. and Peter J. Burke. *Education for Employment: A Resource and Planning Guide*. Madison: Wisconsin Department of Public Instruction, 1988.

Prizant, B.M. *Toward an Understanding of Language Symptomatology of Visually-impaired Children*. Vancouver, British Columbia: Canadian National Institution for the Blind, 1984. ERIC Document No. ED 260 566.

Rafael, B. "Art Activities for Children with Special Needs." *Childhood Education* 57.3 (January/February 1981), pp. 149-155.

Recchia, S.L. *Heart to Heart*. Los Angeles: The Blind Children's Center, 1985.

Recchia, Susan. *Welcome to the World*. Los Angeles, CA: The Blind Children's Center, 1985.

Read, R. *Cooking by Touch*. New York: Continuum Publisher, 1982.

Resnick, R. "Creative Movement Classes for Visually Handicapped Children in a Public School Setting." *New Outlook for the Blind* 67.10 (1973), pp. 442-447.

Resource Guide for Teachers of Visually Impaired Students. Nebraska City: Nebraska School for the Visually Handicapped.

Roessing L. *Adapting the Environment for Visually Impaired Students: Practical Methods and Materials to Enhance the Use of Low Vision*. Fremont, CA: California School for the Blind, 1984. ERIC Document Number 264 701.

Rogers, S.J. and D.B. D'Eugenio. "Assessment and Application." In *Developmental Programming for Infants and Young Children*. Eds. D. S. Schafer and M. S. Moersch. Ann Arbor: The University of Michigan Press, 1977.

Rogow, S.M. "A Communication Curriculum for the Blind Multiply Handicapped Children." In *A Teachers' Guide to the Special Educational Needs of Blind and Visually Handicapped Children*. New York: American Federation for the Blind, 1982.

_____. "Social Routines and Language Play: Developing Communication Responses in Developmentally Delayed Blind Children." *Journal of Visual Impairment and Blindness* 77.1 (January 1983), pp. 1-4.

Rossi, P. "Curricular Adaptations: Mathematics." In *Foundations of Education for Blind and Visually Handicapped Children and Youth*. Ed. G.T. Scholl. New York: American Foundation for the Blind, 1986. 367-374.

Rouse, M. and J. Ryan. "Teacher's Guide to Vision Problems." *The Reading Teacher*, 38.3 (December 1984), pp. 306-317.

Russo, R.J. "Corrective and Recreation Gym Classes for the Blind." *The New Outlook for the Blind* 63.5 (1969), pp. 147-151.

Scott, E.P. *Your Visually Impaired Student: A Guide for Teachers.* Baltimore, MD: University Park Press, 1982.

Science Technology Society. *Science Education for the 80s.* Washington, DC: National Science Teachers Association, 1982.

Shaw, R.A. "The Creative Arts." In *Foundations of Education for Blind and Visually Impaired Children and Youth.* Ed. G.T. Scholl. New York: American Foundation for the Blind, 1986. 385-396.

Simpson, F. "Transition to Adulthood." In *Foundations of Education for Blind and Visually Handicapped Children and Youth.* Ed. G.T. Scholl. New York: American Foundation for the Blind, Inc., 1986. 405-422.

Singleton, L. and L. Madge. *Resources for Teaching Social Studies in the Mainstreamed Classroom.* Mavis Sourcebook 6. Boulder, CO: Social Studies Consortium, Inc., 1979.

Social Studies Materials Adaptations for Visually Handicapped Elementary Students. Boulder, CO: Social Science Education Consortium, Inc., 1981.

Spohn, C. "Detecting Vision Problems." *Instructor* 90.10 (May 1981), pp. 94-95.

A Step by Step Guide to Personal Management for Blind Persons. New York: American Foundation for the Blind, 1970.

Step by Step: The Wisconsin Plan for Arts in Education. Madison: Wisconsin Department of Public Instruction and Wisconsin Arts Board, 1988.

Stephens, B. and C.M. Grube. "Development of Piagetian Reasoning in Congenitally Blind Children." *Journal of Visual Impairment and Blindness* 76.4 (April 1982), pp. 133-143.

Stephens, R. "Running Free: The Use of a 'Running Cable' with Blind Adolescents Who Function on a Retarded Level." *New Outlook for the Blind* 67.10 (1973), pp. 454-456.

Sykes, K.C. *Creative Arts and Crafts for Children with Visual Handicaps.* Louisville, KY: American Printing House for the Blind, 1974.

Thompson, R.J., Jr. and A.N. O'Quinn. *Developmental Disabilities: Etiologies, Manifestations, Diagnoses, and Treatments.* New York: Oxford University Press, 1979.

Traber, M. "Funding Sources for Visually Impaired Students in Higher Education." *Journal of Visual Impairment and Blindness* 81.10 (December 1987), pp.472-76.

Trent, S.D. "The Importance of Social Skills in the Employment Interview." *Education for the Visually Handicapped* 19.1 (Spring 1987), pp. 7-18.

Trice, C. *The Visually Handicapped Child in the Regular Class.* AFT Teachers Network for the Education of the Handicapped, 1981. ERIC Document Number ED 235 166.

Tuttle, D.W. "The Role of the Special Education Teacher-Counselor in Meeting Students' Self-esteem Needs." *Journal of Visual Impairment and Blindenss* 81.4 (April 1987), pp. 156-161.

VanderKolk, C,. *Assessment and Planning with the Visually Impaired.* Baltimore, MD: University Park Press, 1981.

The Visually ImpairedChild in the Regular Classroom. Edmonton, Canada: Alberta Department of Education, 1982. ERIC Document Number ED 231 131.

Vision Therapy: *New Backgrounds.* St. Louis, MO: American Optometric Association, May 1985.

Watkins, K. "A Creative Dramatic Project at the Georgia Academy for the Blind." *Journal of Visual Impairment and Blindness* 75.7 (1981), pp. 277- 280.

Weiss, J. and J. Weiss. "Teaching Handwriting to the Congenitally Blind." *Journal of Visual Impairment and Blindness* 72.7 (1978), pp. 280-282.

Wright, F.J. *Project Vision Up Assessment: Validity and Reliability.* Unpublished doctoral dissertation. Provo, UT: Brigham Young University, 1980.

Wyson, H.P. *A Curriculum for Teaching Dressing and Grooming Skills to Visually Impaired and Multi-handicapped Students.* Pittsburgh: Western Pennsylvania School for Blind Children, 1983.

Yeadon, A. *Toward Independence/The Use of Instructional Objectives in Teaching Daily Living Skills to the Blind.* New York: American Foundation for the Blind, 1974.

Appendix E

Resources for Career and Work

Test	Address
Career Occupational Preference System	EDITS P.O. Box 7234 San Diego, CA 92107
Micro-Computer Evaluation and Screening Assessment	VALPAR P.O. Box 5767 Tucson, AZ 85703-5767
Conceptual Understanding through Blind Evaluation	VALPAR P.O. Box 5767 Tucson, AZ 85703-5767
Employment Competency Package	Vocational Studies Center University of Wisconsin-Madison 964 Ed. Science Building 1025 W. Johnson Street Madison, WI 53706
Career Decision Making	American Guidance Services Circle Pines, MN 55014
Career Skills	Wisconsin Career Info. System 1078 Ed. Science Unit I 1025 W. Johnson Street Madison, WI 53706
Career Scan	Wisconsin Career Info. System
Self-Directed Search	Stoelting 620 Wheat Lane Wood Dale, IL 60191
Strong-Cambell	Standford University Press Standford, CA 94305
Kunder Vocational Preference System	The Psychological Corporation 304 East 45th Street New York, NY 10017
PRG Bauman Interest Inventory	

SCREEN Test	Associated Services f/t Blind 919 Walnut Street Philadelphia, PA 19107
Tool Technology	CTB/McGraw Hill Del Monte Research Park Monterey, CA 93940
Talent Assessment Program	Silver Fox Publications 1020 E. Desert Inn Las Vegas, NV 89109 Personal Test for Industry
Minnesota Rate of Manipulation	The Psychological Corporation 757 Third Avenue New York, NY 10017
Pennsylvania Bi-Manual Work Sample	MIND, Inc. 1133 Avenue of the Americas New York, NY 10036
Purdue Pegboard	Talent Assessment, Inc. P.O. Box 5087 Jacksonville, FL 32207
Bennett Hand Tool Test	American Guidance Service Publishers Building Circle Pines, MN 55014

Assessment Tools

The Department of Public Instruction

Vocational Assessment Catalog: This is a catalog of items adapted for the blind and visually impaired student. Prices, publishers, costs, and availability of each and every item is available from Robert E. Arndt, Vocational Education Specialist, WSVH.

Occupational Information Library for the Blind
Greater Detroit Society for the Blind

Occupations currently held by visually impaired persons. Indexed by work areas and job characteristics. Large print text edition currently being updated by Foresights Network, a computer-based informational system

Gugerty and Tindall
Vocational Studies Center
University of Wisconsin, Madison.

Tools, Equipment, and Machinery Adapted for the Vocational Education and Employment of Handicapped People: Catalog and supplement. In addition to descriptions and illustrations of modified tools, equipment, and machinery, there are examples of devices which were developed to overcome an individual's specific handicaps in specific work or educational settings. Supplement is included.

Bagley, Cook, Graves, Hagedorn, and Morre
Rehabilitation Research and Training Center on Blindness and Low Vision
Mississippi State University

Career Development of Blind and Visually Impaired Persons: An Annotative Bibliography. Introduction, literature, client assessment services, pre-employment and work adjustment training, personal/social interactive capability training, client vocational education training, employment support services, attitudinal barriers, rehabilitation professional education needs, indices.

Career Occupational Preference System
Edit
P.O. Box 7234
San Diego, CA 92107

Measures interests, abilities, values, and includes a comprehensive career guide. At this time available in large print or regular print only.

Pennsylvania Bimanual Work Sample

A test of motor skill combining finger dexterity of both hands, gross movement of both arms, eye-hand coordination, and some indication of the individual's ability to use both hands together.

Perdue Peg Board

A test of dexterity designed to aid and measure two types of activity; one involving gross movement of hands, fingers, and arms; and the other involving primarily what might be called "fingertip" dexterity.

Public Affairs Pamphlet #631
Jobs for Disabled People, by Frank Bowe. This pamphlet was obtained for AFB.

Public Affairs Pamphlet #645
Creating Careers for Blind People: Rehabilitation and Technology, by Irving R. Dickman. This pamphlet was obtained from AFB.

AER
Don't Settle for Just a Job, Choose a Career.

The Psychological Corporation
New York
Charles R. Langmuir, Personal Tests for Industry. Large print and braille score sheets, answer keys. Oral directions. Vertical: Directionality.

Elements of Education for Employment

Career Exploration, Planning, and Decision Making

1. Assess Capabilities and Interests
   - — Identify aptitudes and abilities
   - — Identify personal interest
   - — Identify career interest
   - — Identify transferable skills
   - — Identify personal traits or strengths
   - — Understands sex-role stereotyping

2. Develop a Career Plan
   - — Identify personal and work values
   - — Understands needs, interest, and values
   - — Select careers consistent with needs, interests, and values
   - — Acquire information about occupations and careers
   - — Identify training, education, and experience requirements
   - — Identify motives for career ladder transitions
   - — Develop short- and long-term goals

3. Labor Market Awareness
   - — Understand labor market information
   - — Relate labor market information to the economy
   - — Identify economic trends related to work
   - — Identify technological trends related to work
   - — Identify employee changes caused by changes in work, economy, or society

4. Consumer Skills
   - — Identify components of a budget
   - — Develop personal budget
   - — Identify ways to balance a budget
   - — Determine cost of borrowed money
   - — Identify reasons for savings
   - — Relate personal budget to choice of occupation/earning power

Employability Skills and Attitudes

1. Employability Skills
   - — Complete job application
   - — Prepare resume
   - — Develop interviewing techniques
   - — Develop telephone skills
   - — Understand benefits, rights, and labor laws
   - — Conduct a job search

2. Attitudes
   - — Learn about positive attitude toward work
   - — Identify good work habits
   - — Learn to work under supervision
   - — Learn to work with others
   - — Understand employer expectations
   - — Understand sex-role stereotyping

3. Other Elements of Education for Employment
   - — Practical application of basic skills
   - — School-supervised work experience
   - — Knowledge of business operation and economics
   - — Vocational education and job skills
   - — Business and education partnership assistance

Developmental Guidance

Elementary Career/Vocational Competencies

1. Acquire knowledge about different occupations and changing male and female roles
   - — Learn about different occupations and changing male and female roles
   - — Learn about how occupations are related to industries
   - — Learn about limitations of traditional views of male/female occupations
   - — Learn about how people prepare for and enter various occupations

2. Become aware of personal interest and preferences
   - — Learn about personal interest
   - — Learn about values and how they are formed
   - — Learn how school, work, and subject areas relate to occupations

Learn about the importance of work in our society

Middle School Career/Vocational Competences

1. Learn to cope with transition in school, home, and community lives
   - — Acquire knowledge about changing nature of work and community
   - — Understand process of growing up, role changes in moving from adolescent to adult
   - — Develop personal plans for coping with change in home, school, work, community
   - — Learn about career ladders and advancement within occupations

2. Became informed about alternative education and vocational choices and preparation for them
   - — Become aware of potential array of careers
   - — Identify information useful in selecting possible careers and educational preparation
   - — Use wide variety of career information in forming tentative career plans

3. Relate personal interest to broad occupational areas
   - — Identify occupations related to personal interest
   - — Explore related or alternative occupations which relate to interests
   - — Relate interest, occupations, and education to potential lifestyle
   - — Evaluate interest in relation to occupational, educational career requirements

4. Learn that sex role stereotyping, bias, and discrimination limit choices, opportunity, and achievement
   - — Understand sex role stereotyping, bias, discrimination, consequences
   - — Identify alternative occupations or careers
   - — Identify strategies to combat stereotyping, bias, discrimination in own career plan
   - — Evaluate alternatives in light of interest, abilities, values, lifestyles

High School Career/Vocational Competencies

1. Understand and develop decision-making skills
   - — Identify steps involved in decision-making
   - — Evaluate personal abilities and limitations
   - — Practice making decisions related to future career choices
   - — Develop a career decision-making plan for lifelong use

2. Understand the world of work and its expectations for employment
   - — Identify the importance of work
   - — Identify employment trends and how they relate to work and career
   - — Identify community, state, national employers, and goods or services produced
   - — Relate careers to society's values and own lifestyle

3. Become informed about educational/work alternatives
   - — Relate educational course work to jobs and careers
   - — Relate educational course work to postsecondary education and training
   - — Identify transferable skills which may be used in a variety of occupations
   - — Identify jobs requiring different skills, interests, and levels of education

4. Understand continuous changes male/female roles and how this relates to career choice
   - — Understand sex role stereotyping as it relates to work and education
   - — Identify limitations placed on persons by stereotyping
   - — Identify changing work patterns for women and men
   - — Identify opportunities regardless of past stereotyping or discrimination

5. Develop the interpersonal skills necessary for harmony in the work place
   - — Identify skills required for working with others in the work place
   - — Develop ability to resolve interpersonal conflicts
   - — Identify personal characteristics which affect how one works with others
   - — Develop ability to express oneself in a positive way

6. Become informed about up-to-date employment opportunities during and after high school
   - — Locate, interpret, and use information about job openings
   - — Identify, use information on working conditions, wages, outlook, etc.
   - — Identify employability skills needed to obtain a job
   - — Prepare resumes and job applications, learn interview techniques

7. Form tentative career goals and strategies to reach them
   - — Develop career plans which will accommodate needs, interest, and values
   - — Develop career plans which include options for education and work experiences
   - — Develop career plans which include use, review of occupational, and educational information
   - — Develop skills needed to evaluate probable outcomes a various career choices

8. Understand lifestyles preferences and relate them to occupational interest
   - — Identify interest, abilities, strengths, and weaknesses as related to lifestyle
   - — Identify how career choices may affect lifestyle
   - — Compare different careers as related to different lifestyles
   - — Understand the contribution of career to a balanced and productive life

Resources for School Counselors

Jobs for Disabled People. Pamphlet; American Foundation for the Blind.

Creating Careers for Blind People; Rehabilitation and Technology—pamphlet; American Foundation for the Blind

Don't Settle for Just A Job: Choose a Career—pamphlet; Association for Education and Rehabilitation of the Blind and Visually Impaired.

Career Development Needs of Blind and Visually Impaired Students and Adults—technical report; Mississippi State University.

Work Samples for Visually Impaired Persons—state of the art review; Mississippi State University.

Enhancing the Career Development and School to Work Transition for Blind and Low Vision Use—technical report; Mississippi State University.

Career Development of Blind and Visually Impaired Persons—annotated bibliography; Mississippi State University.

Networks for Employment of Blind-Visually Impaired Persons—statistical brief, American Foundation for the blind.

Job Opportunities for the Blind—job listing; National Federation of the Blind

UW-Madison Vocational Studies Department—Job Replication Study for the Handicapped.

Appendix F

Sample Eye Report Form

D P I Wisconsin Department Of Public Instruction
EYE REPORT FOR CHILDREN WITH VISUAL PROBLEMS
P1-2015 (Rev. 9-90)

The information in this report is confidential.

Type or Print

INSTRUCTIONS; EXAMINER—Complete and return to:
WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION
DIVISION FOR HANDICAPPED CHILDREN AND PUPIL SERVICES
125 SOUTH WEBSTER STREET
P.O. BOX 7841
MADISON, WI 53707
ATTN: ANDREW PAPINEAU

Student's Name	Sex	Date of Birth
Address *Street, City, County, State ZIP*		
Grade / School	City	

I. REFERRAL

Name of Person Making Referral	Title
Address	Telephone *Area/Number*

II. MEASUREMENTS

Approximate measurements if unable to obtain accurate readings

A. VISUAL ACUITY	Distant Vision: Without Correction	Distant Vision: With Best Correction	Distant Vision: With Low Vision Aid	Near Vision: Without Correction	Near Vision: With Best Correction	Near Vision: With Low Vision Aid	Prescription: Sph	Prescription: Cyl	Prescription: Axis
Right Eye (O.D.)									
Left Eye (O.S.)									
Both Eyes (O.D.)									

Measurements above are: ☐ Accurate ☐ Approximate

B. Is child determined to be legally blind for distant vision? ☐ Yes ☐ No For near vision? ☐ Yes ☐ No

C. If low vision aid is prescribed, specify type and recommendation for use:

D. Field of Vision	O.D.	O.S.
Is there a limitation in Child's field of vision?	☐ Yes ☐ No If yes, widest diameter of remaining visual field (In degrees) _____)	☐ Yes ☐ No If yes, widest diameter of remaining visual field (In degrees) _____)

E. Is there impaired color vision? ☐ No ☐ Yes—*If yes, for which colors?* _____

III. CAUSE OF BLINDNESS OR VISION IMPAIRMENT

A. Present ocular condition(s) responsible for vision impairment. *If more than one, check ( ) the one which probably first caused severe vision impairment.*

O.D.

O.S.

B. Etiology (underlying cause of ocular condition primarily responsible for vision impairment. *E.G., specific disease, injury, poisoning, heredity, or other prenatal influence*
O.D. O.S.

C. If unable to test due to other handicapping conditions, does etiology indicate a visual impairment greater than 20/70 in the better eye or a field restriction? ☐ Yes ☐ No

PAGE 2

PI-2015

IV. PROGNOSIS AND RECOMMENDATIONS

A. Student's vision impairment considered to be: ☐ Stable ☐ Deteriorating ☐ Uncertain

Recommended treatment, if any:

C. Glasses
☐ Not Needed ☐ To be Worn Constantly ☐ For Close Work Only ☐ Other, *Specify*

D. Lighting Requirements
☐ Average ☐ Better than Average ☐ Less than Average

E. Recommended Date of Re-Examination

F. Physical Activity
☐ Unrestricted ☐ Restricted

Signature of Examiner | ☐ M.D. ☐ O.D. | Date of Examination

Address

If clinic case, Name of Clinic | Number

QUESTIONS AND CONCERNS REFERRING PERSON

PHYSICIAN RESPONSE

BEST COPY AVAILABLE